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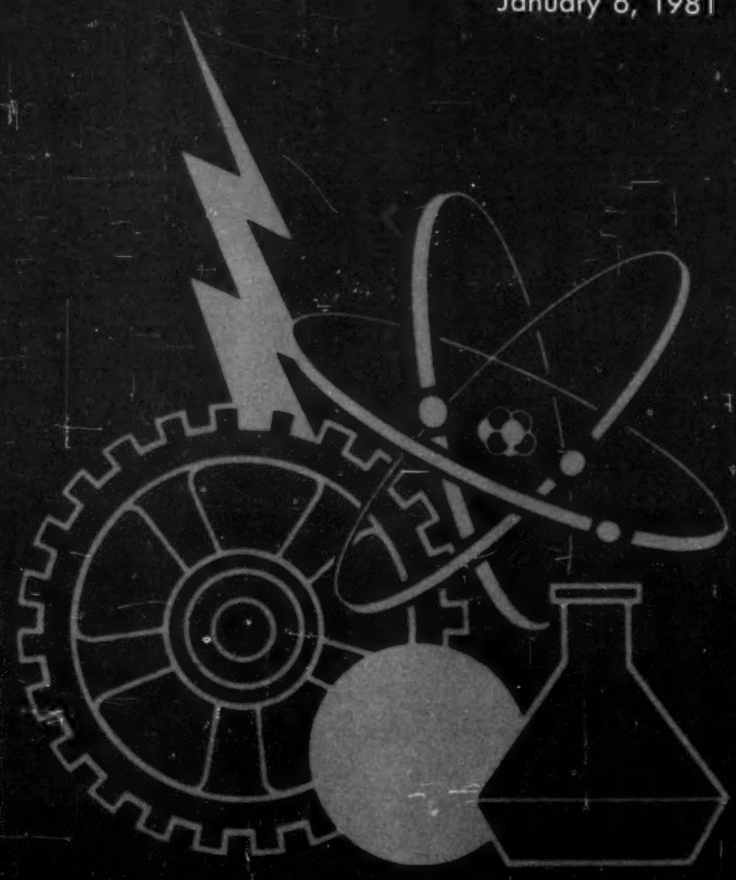
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

January 6, 1981



U.S. DEPARTMENT OF COMMERCE

Patent and Trademark Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the
UNITED STATES PATENT and TRADEMARK OFFICE

January 6, 1981 Volume 1002 Number 1

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THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $300.00 per annum for first-class mailing, also available as fourth-class mail at $200.00; foreign first-class mailing rates will be furnished upon request; single copies each, $4.00 domestic, $5.00 foreign.

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GENERAL INFORMATION concerning TRADEMARKS, price $1.50 each.

PRINTED COPIES OF PATENTS are furnished by the Patent and Trademark Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS AND DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

CONSOLIDATED LISTING OF RECENT OFFICIAL GAZETTE NOTICES RE PATENT AND TRADEMARK OFFICE PRACTICES AND PROCEDURES

PATENT NOTICES

The following is a compilation of the more important notices and rule changes which have been published in the OFFICIAL GAZETTE *from July 1, 1964, through December 31, 1980. These notices and rule changes are currently in effect unless otherwise noted.*

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INFORMATION AND CORRESPONDENCE

(1) OFFICIAL PATENT OFFICE MAILING ADDRESS REMAINS WASHINGTON, D.C.

The official mailing address for all communications sent to the Patent Office remains:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Any telegrams sent to the Patent Office must also bear the above identical address.

The physical location of the Patent Office is 2021 Jefferson Davis Highway, Arlington, Virginia. This address must not be used when addressing mail to the Patent Office.

No reference to Crystal Plaza, Virginia, should be made in the address of *any* communication intended for delivery to the Patent Office by the Post Office Department or Western Union.

Compliance with this instruction will help prevent any unnecessary delay in the delivery of mail, telegrams, etc.

C. A. KALK,
Feb. 20, 1969. *Director of Administration.*

(Office name change per Public Law 93–596, Jan. 2, 1975)

[860 O.G. 662]

(2) GROUP NUMBER SHOULD APPEAR ON COMMUNICATIONS RELATING TO PENDING APPLICATIONS

It is again requested that the Group number be typed on amendments and other communications relating to pending applications in order to expedite the handling of mail and to conserve manpower. The number of the Group should be placed on the right-hand side, opposite the Serial Number or name of applicant. In view of the vast amount of mail, continued careful attention to these details will do much toward avoiding delay in handling of mail.

C. A. KALK,
Nov. 6, 1969. *Director of Administration.*

[869 O.G. 345]

(3) IDENTIFICATION FOR APPLICATION CORRESPONDENCE

The Office is continuing to experience difficulty in matching incoming papers with the corresponding application files. This applies especially to responses to Office Actions, powers of attorney, changes of address, status letters, requests for extensions of time, and petitions.

A very necessary part of a complete identification of a pending application is the three-digit Group or Art Unit number, e.g., 110 or 111. Frequently, the Group Art Unit number is entirely omitted, or there are errors in this number. In the latter situation the error often occurs as a result of the case having been reassigned within the Office, and the communication is directed to an Examining Group other than that indicated in the most recent Office Action.

Where the Group Art Unit number is entirely omitted, the routine operations of the Application Branch must be interrupted solely for the purpose of determining the location of the application so that the communication can be properly routed. Under these circumstances the efficiency of the Application Branch is impaired and the incoming paper is delayed in reaching its proper destination. Where such papers are not essential to compliance with a statutory period or time limit for response, they may be returned for completion to identify the location of the files.

To assist the Office in expediting its business, it is requested that ALL papers relating to a pending application include the following information:

1. Serial number (checked for accuracy),
2. Group Art Unit number (copied from filing receipt or most recent Office Action),
3. Filing date,
4. Name of the Examiner who prepared the most recent Office Action.
5. Title of the invention.

To further reduce the burden on the Application Branch and the Examining Groups, it is also requested that the submission of additional or supplemental papers on a newly filed application be deferred until a filing receipt has been received. In the same vein, it would be appreciated if the filing of additional papers, relating to an allowed application were deferred until a notice of allowance (POL–85) was received.

If the above suggestions are adopted the processing of both new and allowed applications could proceed more efficiently and promptly through the Patent Office.

RICHARD A. WAHL,
Mar. 5, 1971. *Assistant Commissioner.*

[885 O.G. 2]

(4) IDENTIFYING APPLICATION CORRESPONDENCE WITH ISSUE BATCH NUMBER

Applicants or their attorney or agent can facilitate matching incoming papers with the corresponding application file by indicating the Issue Batch Number on all papers filed in the Office after receiving the Notice of Allowance and before the time the Issue Fee Receipt is received.

The Issue Batch Number is printed on the Notice of Allowance form in Box 4 in the lower left-hand corner below the address. The Issue Batch Number consists of a capital letter followed by two digits, for example; "A03," "D18," "F42," "J79." Any lower case letters before the Issue Batch Number should be ignored since they are the typist's initials. Use of the Issue Batch Numbers is important since the allowed applications are filed by these numbers.

Any paper filed after receiving the Issue Fee Receipt should include the indicated patent number rather than the Issue Batch Number. At this time in the processing, the Issue Batch Number is no longer useful since the application has been removed from the batch at the time the patent number was assigned.

RICHARD J. SHAKMAN,
Jan. 16, 1976. *Assistant Commissioner for Administration.*

[943 O.G. 519]

(5) HAND DELIVERY OF PAPERS

The notices of November 10, 1969 (869 O.G. 345) and September 8, 1970 (879 O.G. 667), regarding "Hand Delivery of Papers," are superseded and the practice indicated below is hereby made effective.

Any paper which relates to a pending application may be personally delivered to an Examining Group. However, the Examining Group will accept the paper only if: (1) the paper is accompanied by some form of receipt which can be handed back to the person delivering the paper; and (2) the Examining Group being asked to receive the paper is responsible for acting on the paper.

The receipt may take the form of a duplicate copy of such paper or a card identifying the paper. The identifying data on the card should be so complete as to leave no uncertainty as to the paper filed. For example, the card should contain the applicant's name(s), Serial No., filing date and a description of the paper being filed. If more than one paper is being filed for the same application, the card should contain a description of each paper or item.

Under this procedure, the paper and receipt will be date stamped with the Group date stamp. The receipt will be handed back to the person hand delivering the paper. The paper will be correlated with the application and made an official paper in the file, thereby avoiding the necessity of processing and forwarding the paper to the Examining Group via the Mail Room.

The Examining Group will accept and date stamp a paper even though the paper is accompanied by a check or the paper contains an authorization to charge a Deposit Account. However, in such an instance, the paper will be hand carried by Group personnel to the Office of Finance for processing and then made an official paper in the file.

WILLIAM FELDMAN,
Jan. 29, 1974. *Deputy Assistant Commissioner for Patents.*

[919 O.G. 1070]

(6) POST CARD RECEIPT REMINDER

Applicants and their attorneys or agents are reminded of the provision in Section 717.01(a) (now Section 503) of the Manual of Patent Examining Procedure relating to the use of post cards as "receipts" of papers filed in the Patent Office.

If a receipt for any paper filed in the Patent Office is desired, it may be had by enclosing with the paper a self-addressed post card identifying the paper. The Patent Office will stamp the receipt date on the card and place it in the outgoing mail.

The identifying data on the card should be so complete as to match the paper with the application or other document to which it is to be associated. For example, the document should be identified by the applicant's name(s), Serial No., filing date, appeal number, interference number, etc., and the paper should be identified by specifying the type thereof, viz, affidavit, amendment, appeal, application papers, brief, drawings, fees, motions, supplemental oath or declaration, petition, etc.

When papers for more than one document are filed under a single cover a return post card should be attached to the paper for *each* document for which a receipt is desired.

RICHARD A. WAHL,
Nov. 21, 1968. *Assistant Commissioner.*

[857 O.G. 667]

(7) STATUS INQUIRIES

In an effort to sharply reduce the volume and need for status inquiries, the past policy that diligence must be established by making timely status requests in connection with petitions to revive is hereby discontinued.

When an application has been abandoned for an excessive period before the filing of a petition to revive, an appropriate terminal disclaimer may be required. It should also be recognized that a petition to revive must be accompanied by the proposed response unless it has been previously filed (Rule 137). Also, under Rule 113, "Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form."

New Applications

Current examining procedures now provide for the routine mailing from the Examining Groups of Form POL–327 in *every* case of allowance of an application except where an Examiner's Amendment is promptly mailed. Thus, the separate mailing of a Form POL–327 or an Examiner's Amendment in addition to a formal Notice of Allowance (POL–85) in all allowed cases would seem to obviate the need for status inquiries even as a precautionary measure where the applicant may believe his new application may have been passed to issue on the first examination. However, as an exception, a status inquiry would be appropriate where a Notice of Allowance is not received within three months from receipt of either a Form POL–327 or an Examiner's Amendment.

Current examining procedures also aim to minimize the spread in dates among the various examiner dockets of each Art Unit and Group with respect to actions on new applications. Accordingly, the dates of the "oldest new applications" appearing in the OFFICIAL GAZETTE are fairly reliable guides as to the expected time frames of when the Examiners reach the cases for action.

Therefore, it should be rarely necessary to query the status of a new application.

Amended Applications

Amended cases are expected to be taken up by the examiner and an action completed within two months of the amendment date. Accordingly, a status inquiry is not in order after response by the attorney until five or six months have elapsed with no response from the Patent Office. A post card receipt for responses to Office actions, adequately and specifically identifying the papers filed, will be considered *prima facie* proof of receipt of such papers. Where such proof indicates the timely filing of a response, the submission of a copy of the post card with a copy of the response will ordinarily obviate the need for a petition to revive. Proof of receipt of a timely response to a final action will obviate the need for a petition to revive only if the response was in compliance with Rule 113.

In General

It is expected that this new policy will result in sharply reducing the number of status inquiries and permit the time now spent on them to be used in increasing Patent Office efficiency in other more essential areas.

Such status inquiries as may be still necessary may be more expeditiously processed by the Patent Office if each inquiry includes the application Serial Number, filing date, name of the applicant, name of the Examiner who prepared the most recent Office action, and Group Art Unit (taken from the most recent Office communication) in addition to the last known status of the application, and is accompanied by a stamped return-addressed envelope. Telephone inquiries regarding the status of applications should be directed to the group clerical personnel and not to the examiners. Inasmuch as the official records and applications are located in the clerical section of the Examining Groups, the clerical personnel can readily provide status information without consulting the examiners.

Status replies will be made by the Patent Office clerical support force and will only indicate whether the application is awaiting action by the Examiner or the applicant's response to an Office action. In the latter instance the mailing date of the Office action will also be given.

The Notices of Dec. 5, 1969 (869 O.G. 1031) and Sept. 22, 1965 (819 O.G. 444) are hereby superseded.

RICHARD A. WAHL,
Nov. 24, 1971. *Assistant Commissioner of Patents.*

[893 O.G. 810]

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(8) CHANGE OF ADDRESS

There recently has been an increased incidence in the number of applications suffering from disruptions in communications stemming from failure to notify the Patent and Trademark Office of a change of address on the part of applicant's representative (attorney or agent of record) in each application wherein he holds an active power of attorney. Applications have become abandoned as a result of an Office action being mailed to the old, uncorrected address and thereby failing to reach the representative at his new address sufficiently early to permit him to file a timely response. Accordingly, the requirement set out below is published as a reminder and is designed to ameliorate this problem.

Where an attorney or agent of record (or applicant, if he is prosecuting his application pro se) changes his correspondence address, he is responsible for promptly notifying the Patent and Trademark Office of his new correspondence address (including ZIP code number). A separate notification must be filed in *each application* for which he is intended to receive communications from the Office. The notification should also include his telephone number.

While the notification need take no particular form, it should be provided in a manner calling attention to the fact that a change of address is being made. Thus, the mere inclusion, in a paper being filed for another purpose, of an address different from the previously provided correspondence address, without mention of the fact that an address change is being made, would not ordinarily be recognized or deemed as instructions to change the address on the file record.

It is emphasized that the above-delineated responsibility is *additional* to the separate obligation (see 37 CFR 1.347) of a registered attorney or agent to notify the Attorney's Roster of any change of his address for entry on the register, which must be done in a letter separate from any notice of change of address filed in individual applications. That obligation continues without change.

The degree of care exercised in adhering to the foregoing requirement for notification of change of address in each concerned application will be a factor for consideration in deciding petitions filed under 37 CFR 1.137 to revive applications which have become abandoned because of a failure to timely receive an Office action addressed to the old address. In such instances, the showing of the cause of unavoidable delay must include an adequate showing that a timely notification of the change of address was filed in the concerned application, in a manner reasonably calculated to call attention to the fact that it was a change of address. If no such notification was made, or was made belatedly, the showing must include an adequate explanation of that failure or delay. A showing that notification was made on a paper filed in the Patent and Trademark Office listing *plural* applications as being affected will not be considered a proper notification.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.
May 28, 1975.

[935 O.G. 1352]

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(9) CHANGE OF ADDRESS OR PRACTITIONER IN A PLURALITY OF PATENT APPLICATIONS

Change of Address

This notice is supplemental to the Notice of May 28, 1975, 935 O.G. 1352.

In those instances where a change in the correspondence address of a registered attorney or agent is necessary in a plurality of applications, and the number of applications is such as to cause undue hardship, the notification filed in each application may be a reproduction of a properly executed, original notification. The original notice may be sent to the Office of the Solicitor as notification to the Attorney's Roster of the change of address, or may be filed in one of the applications affected, provided that the notice includes an authorization for the public to inspect and copy the original notice in the event one of the applications containing a copy matures into a patent and the application containing the original paper is either pending or has become abandoned. The copies submitted in each affected application must identify where the original paper is located. Otherwise, the practice governing the filing of notifications of change of address remains the same.

Powers of Attorney

In the event of a need to file a change in the power of attorney in a plurality of applications of a common assignee or inventive entity, and the number of applications is such as to cause undue hardship, a single, original paper may be used provided that a reproduction of this original paper is supplied in each of the affected applications. The copy of the original paper must identify in which application the original paper is located and authorize the public to inspect and copy the original paper in the event one of the applications containing a copy matures into a patent and the application containing the original paper is pending or has become abandoned. The procedures and usual prerequisites for the filing of grants and/or revocations of power of attorney otherwise remain the same.

WILLIAM FELDMAN,
Sept. 9, 1976. *Deputy Assistant Commissioner for Patents.*

[951 O.G. 454]

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(10) EXPRESS MAIL

This notice is in response to a number of inquiries received in the Patent and Trademark Office regarding the notice on Express Mail of February 11, 1975, published in the OFFICIAL GAZETTE of March 11, 1975 (932 O.G. 340).

There are two types of Express Mail delivery offered by the U.S. Postal Service—"Post Office to Addressee" and "Post Office to Post Office." The only type of service which can be used for Express Mail directed to the Patent and Trademark Office is "Post Office to Addressee." This service provides for delivery to one of our employees in Room 1627, Department of Commerce Building, Washington, D.C., no later than 3:00 p.m. of the next workday following its deposit before 5:00 p.m. at any postal facility with an Express Mail window.

The only address that should be used for Express Mail sent to the Patent and Trademark Office is:

"Commissioner of Patents and Trademarks
Washington, D.C. 20231."

"Post Office to Post Office" Express Mail *does not* provide for delivery but instead is retained at the postal facility of the addressee for pickup. The Postal Service *does not* notify the addressee that this type of Express Mail has been received and is awaiting pickup. If not picked up, this mail is held for 15 days and then returned to the sender.

Therefore, since the Patent and Trademark Office does not have resources for picking up any mail, including Express Mail, the "Post Office to Post Office" Express Mail will not reach the Patent and Trademark Office.

WILLIAM I. MERKIN,
Acting Assistant Commissioner for Administration.
May 15, 1975.

[936 O.G. 1554]

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(11) CERTIFICATE OF MAILING PROCEDURES

On November 1, 1976, the Patent and Trademark Office instituted the Certificate of Mailing Procedure by promulgating 37 CFR 1.8 in an attempt to reduce the number of problems resulting from late receipt of responses due to mail delays. This notice was published in the OFFICIAL GAZETTE on October 26, 1976 (951 O.G. 1342 and TM 210). Guidelines relative to this procedure were published in the OFFICIAL GAZETTE on November 16, 1976 (952 O.G. 918 and TM 174).

Although the new procedure has gained wide acceptance, it has not been entirely without problems. One major problem involves the correlation of the certification with the appropriate papers when presented on a separate sheet. In order

to curtail this problem and other minor ones, the guidelines published on November 16, 1976, are superseded by the following guidelines. They are applicable to responses in both patent and trademark matters, as permitted by 37 CFR 1.8.

Guidelines

A) The certification requires a signature. Specifically, if the certification appears on a paper that requires a signature, two signatures are required, one for the paper and one for the certification. Although not specifically required by 37 CFR 1.8, it is preferred that the certificate be signed by the applicant, assignee, or registered practitioner.

B) When possible, the certification should appear on a portion of the paper being submitted. However, if there is insufficient space to make the certification on the same paper, such as in the case of the patent issue fee transmittal form PTO–85, the certification should be on a separate sheet securely attached to the paper.

C) When the certification is presented on a separate sheet, that sheet must (1) be signed and (2) fully identify and be securely attached to the paper it accompanies. The required identification should include the serial number and filing date of the application as well as the type of paper being filed, e.g., responses to rejection or refusal, Notice of Appeal, etc. An unsigned certification will not be considered acceptable.

Moreover, without the proper identifying data, a certification presented on a separate sheet will not be considered acceptable if there is any question or doubt concerning the connection between the sheet and the paper filed.

If the sheet should become detached from the paper and thereafter not associated with the appropriate file, evidence that this sheet was received in the Office can be supported by submitting a copy of a post card receipt specifically identifying this sheet and the paper and by submitting a copy of the sheet as originally mailed. Attention is directed to the notice of November 21, 1968 published in the OFFICIAL GAZETTE (857 O.G. 667) relative to the use of post cards as receipts.

D) In situations wherein the correspondence includes papers for more than one application (e.g., a single envelope containing separate papers responding to Office actions in different applications) or papers for various parts of the Office (e.g., a patent issue fee transmittal form PTO–85 and an assignment), each paper must have its own certification as a part thereof or attached thereto.

E) In situations wherein the correspondence includes several papers directed to the same application (e.g., a proposed response under 37 CFR 1.116 and a Notice of Appeal), each paper should have its own certification as a part thereof or attached thereto.

Use of Stamped Certification

Some practitioners are placing the certification language on the first page of a paper with an inked stamp. Such a practice is encouraged because the certification is not only readily visible but also forms an integral part of the paper. An example of a preferred stamp is:

> I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on _____
> (Date of Deposit)
> _____
> Name of applicant, assignee, or Registered Representative
> _____
> Signature
> _____
> Date of Signature

Interpretations

The phrase "prior to expiration of the set period" in 37 CFR 1.8(a) includes the last day of the set period, which last day may be the "next succeeding secular or business day" as set out in 35 U.S.C. 21. Also, the filing of a 37 CFR 3.54 form to effect a filing under 37 CFR 1.60 is considered the filing of an application and is, therefore, excluded from the Certificate of Mailing Procedure.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patent and Trademarks.*

[962 O.G. 20]

(12) CHANGE IN LEGAL HOLIDAYS

The Commissioner's Notice of December 2, 1970, "Change in Legal Holidays" is hereby rescinded, in view of Public Law 94–97, September 18, 1975, 89 Stat. 479, which amended the listing of legal public holidays in 5 USC § 6103 by changing the Veterans Day holiday from the fourth Monday in October to November 11 of each year. Section 6103, as amended, reads as follows:

(a) The following are legal public holidays:
New Years Day, January 1.
Washington's Birthday, the third Monday in February.
Memorial Day, the last Monday in May.
Independence Day, July 4.
Labor Day, the first Monday in September.
Columbus Day, the second Monday in October.
Veterans Day, November 11.
Thanksgiving Day, the fourth Thursday in November.
Christmas Day, December 25.

Each of the holidays enumerated will constitute "a holiday within the District of Columbia," as referred to in Section 21, Title 35, United States Code.

Attention is called to the fact that the above listing of holidays in 5 USC § 6103, as amended, should be followed, rather than the listing appearing on page 69 of the June 1979 Patent Laws pamphlet which does not reflect the noted amendment.

LUTRELLE F. PARKER,
Date: Sept. 25, 1979. *Acting Commissioner, U.S. Patent and Trademark Office.*

EDITORIAL NOTE: Sec. 6103(c) states that January 20 of each fourth year after 1965, Inauguration Day, is also a legal public holiday.

[987 O.G. 80]

(13) ACCEPTABLE DRAWINGS FOR PATENTS

Approximately ten years ago, the Office's standards for acceptable drawings with respect to certain matters including the blackness and minimum thickness of inked lines, and shading of drawings, were relaxed in order to reduce the backlog of informal drawings at that time.

Apparently, because of the increased use of pens with a round, open-end capillary tip in place of the conventional draftsman's drawing pen, the Office now has a problem of obtaining acceptable reproduction copies of thin, light and gray lines which appear on many drawings. As a result, approximately 10,000 drawings sheets filed each year are *not* acceptable for normal reproduction and microfilming from the printed copy. Special printing steps must be taken to try to print very thin or light lines. Inked lines should be at least 0.012 inch in width and no closer together than 0.05 inch. Shading lines should be constructed to meet these criteria for acceptable drawings. The inked lines must not rub off the standard bristol board sheet, and their reflectance should not exceed 12%.

Applicants and draftsmen are requested not to use thin or light lines on their drawings. In the future, drawing requirements will be more stringent regarding the blackness and minimum thickness of lines to be acceptable. The Chief Draftsman has been instructed to adhere strictly to the above standards and criteria after January 1, 1978 so that special printing requirements can be held to a minimum.

Persons interested in examples of acceptable and unacceptable lines for drawings may obtain one set of "Printed Examples from Unacceptably Inked Drawings" by writing to:

The Chief Draftsman
U.S. Patent and Trademark Office
Washington, D.C. 20231

RICHARD J. SHAKMAN,
Oct. 20, 1977. *Assistant Commissioner for Administration.*

[964 O.G. 21]

(14) REGULATIONS FOR THE USE OF THE FACILITIES OF THE PATENT AND TRADEMARK OFFICE

Revision of Regulations

AGENCY: Patent and Trademark Office, Commerce.
ACTION: Notice.
SUMMARY: The Patent and Trademark Office gives notice of a revision of its "Regulations for the Public Use of Records in the Public Search Room for Patents of the Patent and

Trademark Office," published in the Federal Register of July 14, 1976, 41 FR 29009. The regulations published in the Federal Register of July 14, 1976, are limited to the use of the Public Search Room for Patents. The revision is intended to allow public use of other Patent and Trademark Office record facilities with minimum risk to the security of Patent and Trademark Office personnel and government property.

EFFECTIVE DATE: June 26, 1979.

FOR FURTHER INFORMATION CONTACT: Bradford R. Huther, Deputy Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, 703–557–2290.

SUPPLEMENTARY INFORMATION: This revision is an extension of the present regulations, published in the Federal Register of July 14, 1976, 41 FR 29009, to allow public use of Patent Examining Group Facilities and the Scientific Library under conditions which are as nearly as possible the same as those which apply to the Public Search Room for Patents.

All persons seeking use of the Public Search Room for Patents and/or the Patent Examining Group Facilities must obtain a User Pass. The guards at the entrances to the Public Search Room for Patents can direct prospective users to the pass issuance desk. User Passes will be issued to persons not under prohibition from using the facilities who agree to abide by the regulations of the Public Search Room for Patents and the Patent Examining Group Facilities.

The use of the Group facilities for search purposes by members of the public is strictly limited to the search of materials not available in the Public Search Room for Patents or the Scientific Library and when it does not conflict with the regular business of Patent and Trademark personnel and only between the hours of 8:45 a.m. and 4:45 p.m. on regular business days.

The Public Search Room for Patents is open 8:00 a.m.–8:00 p.m., Monday through Friday except on legal holidays. The hours of the Record Room are 8:00 a.m.–5:00 p.m. on the days the Public Search Room for Patents is open.

The revised regulations appear below:

REGULATIONS

Regulations for members of the public using the facilities of the U.S. Patent and Trademark Office, including but not limited to the Public Search Room for Patents.

The Public Search Room for Patents is defined as that area comprising the foyers of the lobbies of Buildings 3 and 4 of Crystal Plaza; the offices; Microfilm Center; restrooms and telephone areas off these foyers; the stacks; Record Room public reception area; study and copier areas between the foyers; and the Mezzanine.

The facilities of the Patent Examining Groups are defined as those areas in Buildings 3, 34 and 4 of Crystal Plaza designating Examining Groups.

With the respect to the Group Facilities, authorized personnel under these Regulations, include Supervisory Patent Examiners and Examining Group Directors.

The Scientific Library is located on the second floor of Building 34 of Crystal Plaza.

To maintain and protect the patents and related records located in the Public Search Room for Patents and the Patent Examining Group Facilities, it is necessary to establish and to enforce certain rules and regulations pertaining to the use thereof. Under applicable statutes and regulations, including 40 U.S.C. 486(c); 41 CFR Subpart 101–20.3; and appropriate Sections of Department Organization Orders 30–3A and 30–3B of the Department of Commerce, the regulations appearing below are established for those using the facilities of the Patent and Trademark Office.

These regulations supersede all previous regulations on the subject.

1. All persons using the facilities of the Patent and Trademark Office are subject to the regulations governing conduct on property under the charge and control of the General Services Administration which appear in 41 CFR Subpart 101–20.3 [41 CFR §§ 101–20.300 through 101–20.314].
2. All posted Official Notices are to be complied with.
3. Smoking is not permitted except in designated areas.
4. No food or beverages in any form are to be consumed except in designated areas.
5. Loud talking, use of radios, and any other form of activity which may disturb other members of the public and/or Patent and Trademark Office personnel are forbidden.
6. Children brought into the Patent and Trademark Office must not be allowed to disturb others.
7. Users of the facilities may not give the Patent and Trademark Office as a mailing address or otherwise suggest that mail may be received at the Patent and Trademark Office; nor may correspondence be conducted on official Patent and Trademark Office stationery.
8. Messages shall not be affixed to walls, desks, phone booths, or other public property, except designated message boards.
9. Patent records and any other property of the Patent and Trademark Office shall not be removed from their normal location without permission from an authorized official; nor shall such records or property be mutilated. Authorization will not be given to remove from any Group Facility, U.S. patents or any other material readily available through the Scientific Library.
10. The use of equipment such as reproducing machines, typewriters and photographic equipment is prohibited without prior permission from an authorized official. Relative to the Public Search Room, the use of dictation equipment is prohibited except in designated areas. Whenever permission is obtained, the use of such equipment must not conflict with Regulation 5.
11. In the Public Search Room for Patents, library trucks or carts are to be used for transporting bundles only. The trucks or carts are not to be used for storage while making searches.
12. In the Public Search Room for Patents, patents temporarily removed from bundles for any purpose must be returned to the proper place in the appropriate bundle.
13. In the Public Search Room for Patents, all bundles of patents must be promptly and properly replaced in the stacks by the user.
14. The reserving of seats and/or working areas is prohibited.
15. Users of the Public Search Room for Patents are not permitted to use Patent and Trademark Office facilities beyond the Public Search Room for Patents after 5:00 p.m.
16. The front portion of the Public Search Room for Patents, i.e., that portion facing Crystal Plaza Drive and having a high ceiling shall not be occupied by users after 6:00 p.m.
17. A valid User Pass must be worn and visible at all times when Patent and Trademark Office facilities are being used. In addition, all persons holding User Passes must register with the designated representative in each Examining Group where they search and must sign a log (sign-in, sign-out sheet) indicating time-in, time-out, name, User Pass number, class(es) and subclass(es) users after 6:00 p.m.
18. User Passes are nontransferable and must be surrendered to authorized Patent and Trademark personnel upon request for cause.
19. Packages, briefcases or other personal effects brought into the Public Search Room for Patents or the Group Facilities are subject to search by authorized Patent and Trademark Office personnel upon request.
20. All packages, briefcases or other personal effects brought into the Group Search Rooms must be removed when leaving the Group Search Room areas.
21. Patents and other documents must not be removed from the Group patent shoes for any reason other than for cursory study thereof while kept in close proximity with the shoe and must not be moved out of their normal sequence.
22. All patent shoes must be promptly replaced in their proper location in the shoe cases.
23. All textbooks, journals and the like must be returned to their proper location.
24. All persons using the facilities of the Patent and Trademark Office are to refrain from engaging in any conduct which (1) is criminal in nature or (2) which causes or appears to cause an employee of the Patent and Trademark Office to violate the conflicts of in-

terest regulations of the Department of Commerce [15 CFR §§ 0.735–1 through 0.735–41].

25. All verbal requests for compliance with these regulations or other posted Patent and Trademark Office Notices pertaining to activity in the Public Search Room for Patents and the Group Facilities, when made by authorized Patent and Trademark Office personnel, must be promptly complied with.

These regulations will be enforced in accordance with the Procedures for Enforcement published in the Federal Register of May 17, 1978, 43 FR 21345 (970 O.G. 114, published May 30, 1978).

Persons violating these regulations may be denied the use of the facilities in the Public Search Room for Patents and the Patent Examining Group Facilities and may further be subjected to prosecution under the Criminal Code. Additionally, the name of any person violating these regulations who is registered to practice before the Patent and Trademark Office may be forwarded to the Solicitor for appropriate action under 37 CFR 1.348.

These Regulations have been instituted in order to maintain high quality and completeness of patent files and to provide an orderly environment for exploring, or studying in depth, the wealth of scientific and technological information contained in United States Patents. Although the Regulations may cause some inconvenience, the understanding and cooperation of users will insure that, for future users, the knowledge contained in United States Patents will be available in an environment conducive to study in the Public Search Room for Patents and the Patent Examining Group Facilities.

June 20, 1979.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

[984 O.G. 26]

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(15) Regulations Relating to the Use of Patent and Trademark Office Records Facilities

Establishment of Enforcement Procedures

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Notice.

SUMMARY: The Patent and Trademark Office is adopting procedures for enforcing existing regulations governing the use of the Public Search Room for Patents and the Patent Examining Group Search Facilities by members of the public. Enforcement of the existing regulations is necessary, and is intended by these procedures, to carry out the commitment of the Office to the public to promote an atmosphere conducive to research and maintain the integrity of the files in the Public Search Room for Patents and in the Examining Group Search Facilities.

EFFECTIVE DATE: 6–30–78.

FOR FURTHER INFORMATION CONTACT: Bradford R. Hunter, Deputy Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, (703) 557–2290.

SUPPLEMENTARY INFORMATION: The procedures will apply in enforcing the regulations for the public use of records of the Public Search Room for Patents and the Patent Examining Group Search Facilities. The regulations of the Public Search Room for Patents were published in the Federal Register for July 14, 1976, 41 F.R. 29009, and incorporated in a Search Room User Agreement entered into by each person who is issued a User Pass. Regulations for Users of the Patent Examining Group Search Facilities were established under Rule 2 of the regulations of the Public Search Room for Patents and were published in the OFFICIAL GAZETTE of March 22, 1977, 956 O.G. 1118. The procedures appear below.

PROCEDURES FOR ENFORCEMENT OF THE REGULATIONS FOR THE PUBLIC USE OF RECORDS IN THE PUBLIC SEARCH ROOM FOR PATENTS AND THE PATENT EXAMINING GROUP SEARCH FACILITIES

Under applicable statutes and regulations, including 40 U.S.C. 486(c); 41 CFR 101–20.3; and appropriate sections of Department Organization Orders 30–3A and 30–3B of the Department of Commerce, the procedures appearing below are established.

Violation Involving the Security System

1. *Unauthorized removal of government property.*

(a) The Public Search Room for Patents is equipped with a security system designed to sound an alarm when an attempt to remove government property from the Public Search Room is detected. Each alarm signal triggered by a person passing through an exit to the Public Search Room will be investigated by security guards stationed at the Public Search Room exits. The person involved will be required to stop and allow the security guards to determine the cause of the alarm. If non-government property is the cause for the alarm, the person will be allowed to proceed without further delay. If unauthorized possession of government property is found to be the cause of the alarm, the person in whose possession the property is found will be advised that a violation has occurred and will be required to surrender the property to the Manager of the Public Search Room. An oral explanation for the possession of such property will be requested by the Manager.

(b) The Manager of the Public Search Room will immediately report each incident involving unauthorized possession of government property to the Deputy Assistant Commissioner for Administration by telephone, and if requested submit a written report, together with the government property and User Pass involved to the Deputy Assistant Commissioner for Administration.

(3) If it shall appear to the Deputy Assistant Commissioner for Administration that unauthorized possession of government property, detected by the security system, was inadvertent or otherwise unintentional, no further action will be taken. Otherwise, the Deputy Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked pursuant to the terms of the Search Room User Agreement. A written decision will be rendered by the Deputy Assistant Commissioner for Administration after consideration of any timely submitted response.

Other Violations of the Public Search Room Regulations

2. *All other violations of the Public Search Room Regulations.*

(a) Each observed or reported violation will be investigated by the Manager of the Public Search Room. If a violation has occurred and is not denied, the person involved will be verbally requested by the Manager to comply with the regulations. If the person involved denies that a violation has occurred, or refuses to comply with a verbal request of the Manager to comply with the regulations, or violates the regulations after having agreed to comply with them, the person will be required to surrender his or her User Pass to the Manager of the Public Search Room.

(b) The Manager of the Public Search Room will submit a written report of each violation, and the User Pass, if surrendered, to the Deputy Assistant Commissioner for Administration.

(c) If the Deputy Assistant Commissioner for Administration is satisfied that a reported violation was inadvertent or otherwise unintentional, the User Pass, if surrendered, will be returned and no further action will be taken. In all other cases, the Deputy Assistant Commissioner for Administration will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked pursuant to the terms of the Search Room User Agreement. A written decision will be rendered by the Deputy Assistant Commissioner for Administration after consideration of any timely submitted response.

Violations of the Patent Examining Group Search Facilities Regulations

3. *Violations of the Regulations for Users of the Patent Examining Group Search Facilities.*

(a) Each observed or reported violation will be investigated by Authorized Official. If a violation has occurred, and is not denied, the person involved will be verbally requested to comply with the regulations. If the person involved denies that a violation has occurred, or refuses to comply with a verbal request to comply with regulations, or violates the regulations after having agreed to comply with them, the person involved will be required to surrender his or her User Pass to the Authorized Official.

(b) The Authorized Official will submit a written report of each violation, and the User Pass, if surrendered, to the Deputy Assistant Commissioner for Patents.

(c) If the Deputy Assistant Commissioner for Patents is satisfied that violation was inadvertent or otherwise unintentional, the User Pass, if surrendered, will be returned and no further action will be taken. In all other cases, the Deputy Assistant Commissioner for Patents will request the person involved to show cause in writing why his or her User Pass should not be suspended or revoked. A written decision will be rendered by the Deputy Assistant Commissioner for Patents after consideration of any timely submitted response.

PENALTIES

4. *Factors to be Considered in Assessing Penalties.*

(a) Penalties will be determined on a case-by-case basis. A record of penalties imposed for given violations will be kept and made available to the public upon request.

(b) Due weight may be given to prior violations of the regulations in assessing whether any given violation is willful, deliberate or intentional.

(c) Prior violations of the regulations will be considered in determining any specific penalty to be imposed. Depending upon the circumstances, the penalty for a first offense may range from an oral or written warning to a 60-day suspension of the User Pass. For a second offense, the penalty may be a suspension of from 5 days to 1 year. For a third offense, the penalty may range from a 30-day suspension to revocation of the User Pass.

GENERAL PROVISIONS

5. *Use of Search Facilities During Suspension or After Revocation of User Pass.*

No individual will be permitted to use the Public Search Room for Patents or the Patent Examining Group Search Facilities while his or her User Pass is suspended or revoked.

6. *Temporary User Pass.*

Any person whose User Pass was surrendered, but not suspended or revoked, may be issued a temporary User Pass which shall be valid until the User Pass is returned or a decision is rendered pursuant to paragraph 1(c), 2(c), 3(c).

7. *Absence of the Deputy Assistant Commissioner for Administration.*

In the absence of the Deputy Assistant Commissioner for Administration, the Director of the Office of Patent and Trademark Services will carry out the functions and responsibilities assigned to the Deputy Assistant Commissioner for Administration in paragraph 1(b) and (c) and 2(b) and (c).

8. *Absence of the Manager of the Public Search Room.*

In the absence of the Manager of the Public Search Room, the Acting Manager will carry out the duties and responsibilities assigned to the Manager in paragraphs 1(a), 1(b), 2(a) and 2(b).

9. *Assistance.*

The Manager of the Public Search Room and the Authorized Official may, when necessary request the Security Officer of the Patent and Trademark Office or the GSA to provide assistance in carrying out their functions in paragraphs 1(a), 2(a), and 3(a).

10. *Petitions.*

A decision rendered by the Deputy Assistant Commissioner for Administration, the Director of the Office of Patent and Trademark Services, or the Deputy Assistant Commissioner for Patents may be reviewed on petition to the Commissioner.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

May 5, 1978.

[970 O.G. 114]

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(16) USE OF CERTIFICATE OF CORRECTION FORMS

The purpose of this notice is, to once again, remind patentees and their attorneys and agents to submit the text of any correction under 37 CFR 1.322 and 1.323 on the Certificate of Correction form, PTO–1050, which is available free of charge from the Patent and Trademark Office. The presentation of all corrections on this form permits its use as camera copy for prompt, direct offset printing of the Certificate of Correction.

Instructions for use of Form PTO–1050 are printed on the top portion thereof, and are also set forth, in further detail, in Section 1402.02 of the Manual of Patent Examining Procedures. It is especially important that the typing be clean and clear. Both thin, light type and heavy, smudged type should be avoided. Changes and corrections are preferably made by use of white opaque correction fluid.

The typing should be within the borders printed on the form and a two-inch blank space should be left at the bottom of the last page of the form for the placement of the signature of the Attesting Officer.

Both sheets of the printed form should be forwarded to the Office. The copies should be stapled together only at the upper left-hand margin at the indicated location.

Copies of form PTO–1050 may be obtained, as needed, from either the Correspondence and Mail Division in Building 2, or from the receptionist in the lobby of Building 3, Crystal Plaza, Arlington, Va.

RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.

May 10, 1977.

[959 O.G. 3]

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(17) GOVERNMENT PUBLICATION SUBSCRIPTION SERVICE

The purpose of this notice is to inform subscribers of Federal Government publications serviced by the Government Printing Office, Superintendent of Documents, of the requirement to standardize subscriber change of address procedures.

It is imperative that the Government Printing Office be advised by each subscriber of an address change and that such advisement be accompanied by the latest subscription address label.

The Government Printing Office has the largest number of subscriptions of any activity in the United States, The Superintendent of Documents maintains about 835 mailing lists containing nearly 3 million addresses. Many of these subscribers frequently change their addresses and inform the Superintendent of Documents in a wide variety of methods. Some large organizations have as many as 20 identical subscriptions to the same street address but with different internal deliveries. Altogether the Government Printing Office is mailing nearly 5 million subscription copies each month. The Government Printing Office requests your cooperation to more effectively maintain the many mailing lists.

For your convenience, a change of address form is reproduced on the last page of the OFFICIAL GAZETTE.

BRADFORD R. HUTHER,
Acting Assistant Commissioner for Administration.

Aug. 9, 1977.

[962 O.G. 2]

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(18) NOTICE TO OFFICIAL GAZETTE SUBSCRIBERS

The Patent and Trademark Office announces a change in the point of contact for subscribers who have not been receiving all of their copies of the patent and/or trademark sections of the OFFICIAL GAZETTE, MPEP Revisions, Trademark Rules of Practice, Annual Indices, and all other patent and trademark publications.

The Superintendent of Documents advises that expiration notices are sent out approximately three months in advance of the expiration date. However, subscribers should not be dependent upon such notices. In the event that a notice is not received within two months of the expiration date, the subscriber should renew his subscription with the Superintendent of Documents and *attach a label* from the envelope in which he receives the gazette, together with a check covering the amount of the subscription.

All correspondence and inquiries concerning subscription services to patent and trademark related publications, and requests for reinstatement of subscriptions should be directed to:

Mr. C. A. LaBarre
Asst. Public Printer
Superintendent of Documents (SD)
Government Printing Office
Washington, D.C. 20401

This notice is effective with the publication date and supersedes the notice published on this subject in 939 O.G. 1, dated October 7, 1975.

RICHARD J. SHAKMAN,
Mar. 14, 1978. *Assistant Commissioner for Administration.*

[969 O.G. 2]

(20) FLEXIBLE WORKING HOURS

On January 4, 1979 the Patent and Trademark Office is beginning a 15 month experiment with flexible working hours for its employees. Under the "flexitime" experiment many of the Office's employees will have flexibility to begin their workdays as early as 6:30 a.m. or as late as 9:30 a.m., and end their workdays between 3:00 p.m. and 6:00 p.m. Employees in every case shall of course work eight hours each day. All or most patent and trademark examiners will have flexible hours.

The public hours of the Patent and Trademark Office will continue to be 8:30 a.m. to 5:00 p.m. All units of the Office which deal directly with the public will be staffed to answer telephone calls and receive visitors during those hours. All employees will be on duty from 9:30 a.m. to 3:00 p.m. The patent public search room will continue to operate from 8:00 a.m. until 8:00 p.m. and the trademark search room from 8:00 a.m. until 5:30 p.m.

With the advent of flexible hours, it will be advisable for members of the public to make appointments in advance when they wish to interview examiners.

DONALD W. BANNER,
Dec. 13, 1978. *Commissioner of Patents and Trademarks.*

[978 O.G. 140]

(21) **Rules Service Company Address Change**

The Patent and Trademark Office has been notified of a change in the address and telephone number of the Rules Service Company which publishes a looseleaf Rules of Practice in Patent and Trademark Cases with a revision service. The new address and telephone numbers are:

Rules Service Company
4341 Montgomery Avenue
Bethesda, Maryland 20014
(301) 656-4660

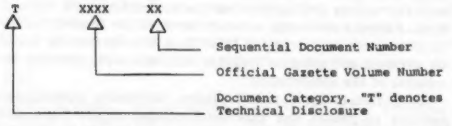
SIDNEY A. DIAMOND,
Date: Apr. 7, 1980. *Commissioner of Patents and Trademarks.*

[994 O.G. 10]

(22) **Defensive Publication Program**

A change in the numbering system of Defensive Publication documents will be implemented, effective with the issue of November 4, 1980.

The numbering system will be as follows:



The numbering system as announced in 869 O.G. 687 remains in effect for the issues of December 16, 1969 through October 1980.

RICHARD J. SHAKMAN,
Date: Sept. 2, 1980. *Assistant Commissioner for Administration.*

[998 O.G. 38]

(23) **Forms Booklet Available**

A new publication titled "Patent and Trademark Forms Booklet" dated October 1979 is now available from the Superintendent of Documents. The price is $12.00 and the stock number is 003-004-00569-6.

The booklet contains forms for use by the public in both patent and trademark cases. The booklet is printed on 8½ by 11 inch paper and is designed for use as a full size master copy for copying. It includes 52 English language forms (oaths, declarations, etc.) for use in patent cases, 69 non-English language forms for use under 37 CFR 1.69 situations in patent cases, 3 forms for use in international applications filed under the Patent Cooperation Treaty, and 70 forms for use in trademark cases.

Orders should be directed to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

SIDNEY A. DIAMOND,
Dated: Mar. 26, 1980. *Commissioner of Patents and Trademarks.*

[993 O.G. 26]

(24) **Patent and Trademark Office Services**

The Patent and Trademark Office is making every effort to utilize its resources as effectively and efficiently as possible. However, delays in some services are being experienced. To improve services, the PTO is taking the following steps:

● Beginning with the issue of January 1, 1980, the original formal drawing which is supplied by the patent applicant and is 8½ by 14 inches (21.0 by 29.7 cm.) is being stored within the patented file in the Patent Search Division. This is a change from the earlier practice under which the drawing is stored in a separate location from the patent file wrappers. The new procedure will simplify obtaining the complete patented file. This procedure will be used for a three month trial period and then reevaluated for its effectiveness.

● Effective December 3, 1979, sale of tokens and maintenance of all token operated photocopy and microfilm reader-printer equipment throughout the Patent and Trademark Office are being performed by a private contractor, T S Info Systems, Inc. (TSI). Improved quality and timeliness of copy service to the public are anticipated.

All token sales are made between the hours of 8:30 A.M. and 5:00 P.M. at the token sales booth in the Record Room located in Building CP-4. When purchasing tokens by check, please make the check payable to "TSI" rather than "Commissioner of Patents and Trademarks." Tokens will not be sold at the cashier's window in CP2.

Effective February 1, 1980, charges for tokens to PTO customer deposit accounts will no longer be accepted.

● *Effective immediately,* no requests for new patent or trademark drawings will be accepted by the Patent and Trademark Office. New drawings will be prepared only for requests already received. All currently available drafting time and facilities are required to correct the backlog of drawings needing correction prior to issue. When this backlog has been eliminated, a notice will be issued to that effect and new drawings can again be prepared for the public.

Effective immediately, three additional special mail room boxes will be established in the PTO:

Box 4 will be used for all mail for the Office of Legislation and International Affairs.

Box 5 will be used for documents which are related to trademarks and for which *no fee* is required at the time of filing; e.g., amendments to applications and requests for extensions of time to file an opposition. For mail directed to the Trademark Trial and Appeal Board, put "Attention TTAB" on the envelope in addition to "Box 5."

Box 7 will be used for reissue applications which are involved in litigation and any subsequently filed papers for these applications.

Mail appropriately addressed will be sorted and forwarded on a more timely basis.

Applicants and other users of the PTO services can assist in improving the efficiency of office operations by doing the following:

● **Use the following special PTO box numbers for forwarding particular types of mail. The boxes should be used only for the specified purpose.**

Box 2—Replenishment of funds in deposit accounts.
Box 4—Mail for the Office of Legislation and International Affairs.
Box 5—"No fee" mail related to trademarks.
Box 7—Reissue applications for patents involved in litigation and any subsequently filed papers for these applications.
Box 8—All papers for the Office of the Solicitor.
Box 9—Coupon orders for U.S. patent and trademark copies.
Box 10—Orders for certified copies of patent and trademark applications.
Box PCT—Mail related to applications filed under the Patent Cooperation Treaty.

Only that material for which the special box was established should be enclosed.

The special box numbers have been established to allow forwarding of particular types of mail to the appropriate areas as quickly as possible. Such mail is forwarded directly to the appropriate area without being opened. Therefore, if any documents other than the specified type identified for each box are addressed to that box, they will be delayed in reaching the appropriate area for which they were intended.

Envelopes should be addressed:

Box_____
Commissioner of Patents and Trademarks
Washington, D.C. 20231

● **Consider the fact that some PTO services are experiencing delays, and allow sufficient lead time for services requested of the Office. Where possible, urgent items which require no fee should be hand delivered to the appropriate area.**

● **Minimize the number of inquiries to the PTO regarding acknowledgment of receipt of applications, fee papers, orders for patent copies, etc.**

● **Include a self addressed return post card with newly filed applications. The serial number assigned the application will be stamped on the post card, which will constitute the means by which the application can be identified.**

● **Use commercial services for preparation of new patent and trademark application drawings.**

● **On all papers which are filed in patent and trademark applications and are being sent to an examining group, include the appropriate identifying data, such as examining group number, examiner's name, and the number of the application paper to which the response is directed. The paper should also identify the type of document being presented (e.g., response to Office action #——, amendment, etc.). The name and telephone number of the individual representing the applicant also should appear on all papers.**

These steps have been devised in an effort to minimize delays in services. We solicit the help and cooperation of the public.

SIDNEY A. DIAMOND,
Jan. 4, 1980. *Commissioner of Patents and Trademarks.*

[990 O.G. 184]

(24.1) **Simultaneous Issue of Patents**

Applicants and their attorneys who desire the simultaneous issue of allowed applications must submit the request to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231
Attention: Office of Publications
CP–2, Room 5C26

The request must contain the following information about *each* allowed application for which simultaneous issue is requested:

(1) serial number
(2) filing date
(3) name(s) of inventor(s)
(4) title of invention
(5) date of allowance

Separate copies of the request must accompany *each* Issue Fee Transmittal (PTO–85b).

Questions concerning this practice may be directed to Mr. Stanley J. Bania, Director, Office of Publications, Area Code (703) 557–3794.

RICHARD J. SHAKMAN,
Aug. 25, 1978. *Assistant Commissioner for Administration.*

[974 O.G. 16]

RECORDS AND FILES

(25) ASSIGNEE NAMES

Effective April 1, 1976, only the first appearing name of an assignee will be printed on the patent where multiple names for the *same* party are identified on the Base Issue Fee Transmittal form, POL–85b. Such multiple names may occur when both a legal name and an "also known as" or "doing business as" name is also included. This printing practice will not, however, affect the existing practice of recording assignments with the Office in the Assignment Division. The assignee entry on form POL–85b should still be completed to indicate the assignment data as recorded in the Office. For example, the assignment filed in the Office and therefore the POL-85b assignee entry might read "Smith Company doing business as (d.b.a.) Jones Company." The assignee entry on the printed patent will read "Smith Company."

For purposes of compiling and publishing the 1976 Annual Index of Patentees, this change will be retroactive to patents issuing on January 6, 1976.

Dec. 17, 1975. RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.

[942 O.G. 186]

(26) SUBMISSION OF UNIFORM ASSIGNEE NAMES ON THE ISSUE FEE PAYMENT FORM PTOL–85b

The Patent and Trademark Office is experiencing problems when computer-sorting assignee names for the Patentee Index because of the non-uniform use of the names of certain companies and corporations on the issue fee payment form PTOL–85b. The use of different spellings or nomenclature for the same company requires the Office to expend time and effort to determine whether the various name forms are in fact for the same company. If such inconsistencies are not corrected, patents to the same company will appear in different locations in the Patentee Index. An example of inconsistent use is "ABC Company, Ltd." and "ABC Co., Limited."

Therefore, persons who list assignee names on issue fee payment form PTOL–85b should ensure that the same company name form is used for all patents issuing to a particular company.

RICHARD J. SHAKMAN,
Nov. 17, 1977. *Assistant Commissioner for Administration.*

[965 O.G. 8]

(27) TITLE OF INVENTION CARRIED ON OFFICE RECORDS

The Patent and Trademark Office is experiencing an increased incidence in the number of newly filed applications in which the title of the invention is inconsistent within the papers. This has resulted in applicants requesting correction of the official filing receipt in many instances to indicate the title preferred by applicants.

Hereafter, whenever the title of the invention appears inconsistent within the papers of a newly filed application for patent, the records of the Office will carry the title as indicated on the first page of the specification and no corrected filing receipt will be issued to indicate another title. Note that 37 CFR 1.72(a) indicates that the title of the invention

should appear as a heading on the first page of the specification.

It should also be noted that applicant may amend the title under 37 CFR 1.115 if any changes are subsequently desired before issuance of a patent.

BRADFORD R. HUTHER,
Acting Assistant Commissioner for Administration.

Aug. 31, 1977.

[962 O.G. 23]

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(28) REVISED PATENT APPLICATION FILING RECEIPT

As a part of the new automated patent application information system, a revised Filing Receipt will be put into use in June 1979. The major modification is a change in size from the current 3 x 5 inch size to a larger 8½ x 11 inch size. It should be noted that this change is consonant with the recently announced, government-wide policy to use 8½ x 11 inch paper.

The same information currently appearing on the Filing Receipt form will be retained on the revised form. In addition, all information supplied by applicant relating to prior domestic, foreign and PCT international applications will be printed on the Receipt. Applicants are requested to verify all of the data printed on the Receipt and notify the Patent and Trademark Office of any errors. Such notification should be directed to the attention of the Application Division.

RICHARD J. SHAKMAN,
Assistant Commissioner for Administration.

May 14, 1979.

[983 O.G. 2]

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(29) NEW SECURITY PROCEDURE

A Security Task Force, which was established in mid-1978, submitted a number of recommendations for improvements in the security of Patent and Trademark Office personnel and government property.

One recommendation that we adopted requires that either an employee building pass, user pass, or visitor pass be worn by each person in the Patent and Trademark Office in a manner so as to be visible at all times when the person is using Patent and Trademark Office facilities. This procedure will permit immediate visual recognition of all persons authorized to use our facilities. User and visitor passes may be obtained from the Receptionist, Public Search Room, Crystal Plaza Building 3, Room 1A03.

Effective upon publication of this notice, all persons will be required to comply with this procedure. Failure to do so may result in denial of the use of our facilities.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

June 4, 1979.

[983 O.G. 25]

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(30) **New System To Monitor Patent Applications**

During this summer the Patent and Trademark Office will begin implementation of a new office-wide computer system, the Patent Application Locator and Monitor System (PALM 3), for monitoring the location and status of pending patent applications. The system will also have the ability to print data on certain form letters such as the Notice of Allowance, using computer-controlled printers located in the Examining Groups. This will permit the Notice of Allowance to be printed and mailed by the Groups shortly after the Examiner has decided that an application is in condition for allowance. Under the new system, the Notice of Allowance will be mailed prior to completion of final issue revision by the Group clerical staff. In those applications where an Examiner's Amendment is required, it will normally be mailed as an attachment to the Notice of Allowance.

When existing printing backlogs have been eliminated, this accelerated mailing should reduce the time between allowance by the examiner and issuance of the patent grant in most cases. The nature and/or extent of the revisions or processing requirements subsequent to mailing of the Notice of Allowance may result in little or no reduction in the time required for the printing of a few patents. In addition, it is possible that, as a result of this additional processing, withdrawal or correction of the Notice for a given application may be required. For instance, prosecution might be reopened as a result of the Quality Review Program. In situations where the Base Issue Fee has been paid and the Notice of Allowance is subsequently withdrawn, the applicant may request that a refund be made or that the fee be credited to a Deposit Account.

Applicants will continue to receive a three part Notice of Allowance packet, but, as a result of automated printing, the Notice will be produced in a slightly revised format. This new format will have the following application data printed thereon:

—Serial Number
—Filing Date
—Total Claims Allowed
—Date of Mailing
—Examiner Name and Group Art Unit
—First Named Applicant
—Title of the Invention
—Base Issue Fee Due (Utility Applications Only)
—Attorney's Docket Number
—Class and Subclass Where Issued

Copy (a) of the new Notice of Allowance will be used as applicant's record copy in the current manner. Copy (b) will continue to be used as a transmittal for the fee with copy (c) required when a charge to a deposit account is authorized. The new version of copy (c) will also have a section to notify the Office of a change in an inventor's address. Note that this address change need not be signed by the inventor. This procedure eliminates the need for the separate Inventor's Address Change form (PTOL–231) now in use.

One other change to current practice will also be implemented as a result of the new system. Beginning with patents issuing in the late fall of this year, advance orders for patent copies will only be sent to the correspondence address of record in the application. This practice will permit computer generation of mailing labels for the orders and thereby eliminate the need for the separate, pink Advance Order form (PTO–721) now in use. Requests for advance orders will now be made in a special section of copy (b) of the Notice of Allowance. During the transition from the old order method to the new, it will be necessary to send some advance orders to the correspondence address of record in the application rather than some other address as has been requested on an earlier submitted Advance Order Form.

While the major impacts on the public will be limited to those discussed above, one other minor matter should be mentioned. It is anticipated that, due to the absence of data in the master data base, some information occasionally may not be printed on the Notice of Allowance or on other form correspondence. However, this does not necessarily mean that a corrected Notice or form letter is required. Furthermore, since the data base is not used for printing of the patent grant, the missing information should appear on the final issued patent if it is in the application file wrapper. This problem is expected to diminish as the implementation of the system proceeds and the data base becomes more complete. The cooperation of applicants and their representatives during this system implementation is sincerely appreciated by the Patent and Trademark Office.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Approved: June 16, 1980.

[997 O.G. 9]

FEES AND PAYMENT OF MONEY

(31) FEES IN CONNECTION WITH AMENDMENTS TO PATENT APPLICATIONS

This notice supplements the Notice of September 10, 1965, 818 O.G. 1207, September 28, 1965, relating to the administration of the act of July 24, 1965, Public Law 89–83, increasing certain fees payable to the United States Patent Office.

That act provides for the payment of additional fees on presentation of certain claims during the prosecution of applications. This provision applies in the case of applications filed on or after October 25, 1965, the effective date of the act. In such cases, when any amendment is filed which presents additional claims over the total number covered by fees previously paid, it should be accompanied by any additional fees due.

As in the case of claims presented after an application is filed and before first action, described in the Notice of September 10, 1965, when independent claims are subsequently presented so that the number of uncanceled independent claims in the application as amended exceeds the number of such claims paid for, an additional fee of $10 is due for each such additional claim. Similarly, an additional fee of $2 is due for each claim added in excess of the number of uncanceled claims, independent or dependent, already paid for.

Treatment of Amendments Unaccompanied by Fees Due

Amendments filed during and after the prosecution of an application and not accompanied by the entire fee due upon such filing will be treated as follows:

If such an amendment is filed in reply to an Office action it will be regarded as not being fully responsive thereto and the practice set forth in section 714.03 of the Manual of Patent Examining Procedure will be followed, care being taken to avoid any abuse of this practice by attorneys as, for example, by habitual submission of such amendments without fees or with insufficient fees.

If an amendment which is not filed in response to an Office action is of such a nature as to require a fee and is not accompanied by the full fee required, it will not be entered and the applicant will be so advised.

Amendment During Interference

An amendment filed in connection with a motion to add counts to an interference (Rule 233) must be accompanied by the claim or claims to be added and with the appropriate fees, if any, which would be due if the amendments were to be entered. It may be that the amendments will never be entered. Only upon the granting of the motion is it necessary for the other party or parties to present the claims, but the fees must be paid whenever presented.

Claims which have been submitted in response to a suggestion by the Office for inclusion in an application must be accompanied by the fee due, if any.

Amendment After Requirement for Restriction

After a requirement for restriction or election of species, nonelected claims will be included in determining the fees due in connection with a subsequent amendment unless such claims are canceled.

Refunds

Money paid in excess or by mistake in connection with an amendment will be refunded in the usual manner.

Amendments affecting the claims cannot serve as the basis for granting any refund.

Money paid in connection with the filing of a proposed amendment will not be refunded by reason of the nonentry of the amendment.

EDWARD J. BRENNER,
Jan. 13, 1966. *Commissioner of Patents.*

[823 O.G. 814]

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(32) DEPOSIT ACCOUNTS—STATUTORY FEE CHARGES

Beginning on May 1, 1966, and until further notice, statutory fees, including filing fees for patent, design, and trademark applications, issue fees, appeal fees and opposition, cancellation and petition fees may be charged against the deposit accounts provided for by Rule 25(a) of the Rules of Practice in patent cases. During this period the prohibition of Rule 25(b) against such charges will be suspended.

In view of the facts that these fees are indispensable parts of the actions to which they relate and that the charging of a fee against an account which does not contain sufficient funds to cover it cannot be regarded as a payment of the fee, it is evident that the overdrawing of a deposit account may result in the loss of a vital date and may also impose a substantial burden on the Patent Office in making appropriate correction of its records. It is, therefore, necessary that effective steps be taken to avoid such overdrafts, as follows:

Checks of all accounts will be made periodically, and if any account is found to have been overdrawn, it will be immediately removed from the active accounts and no further drafts on it will be honored. Prompt payment of the outstanding balance will be required and the depositor or his attorney may be called on for an itemized statement identifying all statutory fees charged against the account during the period in question in order that it may be ascertained whether any previously granted date should be withdrawn.

It is emphasized that the success of the procedure outlined above depends upon the maintenance of a sufficient balance in deposit accounts at all times to meet any charges made against them. The Office must, therefore, strictly refuse to permit any depositor who has once overdrawn his account to maintain such an account in the future and in the event that any substantial number of overdrafts occurs it may be necessary to reestablish the prohibition of Rule 25(b) against charging statutory fees against deposit accounts.

Accordingly, effective May 1, 1966, the requirement of Rule 25(a) that an amount sufficient to cover all charges made against an account must always be on deposit will be strictly enforced, regardless of whether any fee is included in such charges and where this requirement is not complied with the account involved will be removed from the active accounts.

EDWARD J. BRENNER,
Feb. 23, 1966. *Commissioner.*

[824 O.G. 1200]

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(33) PRACTICE IN THE USE OF ACCOUNTS FOR PAYMENT OF STATUTORY FEES

In the OFFICIAL GAZETTES of March 15, 22, and 29, there appeared copies of an announcement by the Commissioner providing for a trial use of accounts established under Rule 25 for the payment of statutory fees. A number of questions have come up in connection with the use of accounts in the payment of these fees prescribed by Public Law 89–83 and, in the interest of uniform practice, publication of a statement is warranted.

A general direction by an applicant or attorney to charge to an account these fees as they arise in any application prosecuted by the applicant, the attorney, or the firm will not be effective for such a purpose. Authority to make charges will be limited to a particular application.

A separate direction to charge shall be filed for each fee. Each such direction to charge a fee shall be transmitted on a separate sheet of paper and, in the case of fees based on modification of claims shall include the best estimate of the fee due. Failure to include such an estimate provides the basis for a refusal to enter any amendment transmitted therewith, as an incomplete response. Where variable fees are involved inclusion of a direction to charge or credit a deficiency or overpayment would appear appropriate.

An issue fee will not be charged to an account until a notice of allowance has been forwarded and a reply to that notice received.

For the purposes of determining the fee due the Patent Office, a claim will be treated as dependent if it contains reference to one other claim in the application. A claim determined to be dependent by this test will be entered if the fee paid reflects this determination. This does not, however, prevent the rejection of such a claim as improper, if, in fact, it is not a dependent claim.

EDWARD J. BRENNER,
Apr. 12, 1966. *Commissioner of Patents.*

[825 O.G. 1183]

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(34) DEPOSIT ACCOUNTS

The practice instituted on May 1, 1966, pursuant to the notice of February 23, 1966 (824 O.G. 1200), whereby statutory fees may be charged against deposit accounts, and such accounts are closed if overdrawn, has resulted in certain difficulties for the Patent Office and deposit account holders. It has been decided therefore to modify that practice as indicated below.

As was pointed out in that notice, the charging of a fee against an overdrawn account cannot be considered as payment of the fee until a proper balance is restored or payment is made in some other way. Accordingly, deposit account holders who charge such fees must assume the risk of losing vital dates if they do not maintain a proper balance in their accounts at all times.

Apart from this, however, the overdrawing of an account places a burden on the Patent Office, particularly where a number of items are charged after the overdraft occurs, and it is appropriate that those who are responsible for causing

such a condition should bear the cost of correcting it. In view of this fact, and of the hardship frequently caused if an account is permanently closed, the practice of closing deposit accounts merely because they are overdrawn will be discontinued, effective August 1, 1966. In lieu thereof an overdrawn account will be immediately suspended and no charges will be accepted against it until a proper balance is restored, together with a payment of ten dollars to cover the work done by the Patent Office incident to suspending and reinstating the account and dealing with charges which may have been made in the meantime. It is expected, however, that reasonable precautions will be taken in all cases to avoid overdrafts, and if an account is suspended repeatedly it will be necessary to close it.

Similarly, because of the burden placed on the Patent Office incident to the operation of deposit accounts, a charge of ten dollars will be made for opening each new account.

EDWARD J. BRENNER,
June 23, 1966. *Commissioner.*

[828 O.G. 377]

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(35) PAYMENT OF ADDITIONAL FEES FOR CLAIMS

Section 41(a) 1 of Title 35 U.S. Code, provides that the Commissioner shall charge "On filing each application for an original patent, except in design cases, $65, in addition on filing or on presentation at any other time, $10 for each claim in independent form which is in excess of one, and $2, for each claim (whether independent or dependent) which is in excess of ten. . . . Errors in payment of the additional fees may be rectified in accordance with regulations of the Commissioner."

The Office accords filing dates to applications with insufficient fees provided the basic $65.00 filing fee is present. In such cases a notice is mailed requiring that the balance of the fee be paid within two months from the notification of the deficiency.

Occasionally applications contain informal claims that counsel feels should not be present. However, since alteration after execution and before filing is prohibited and could result in the application being stricken from the files, such applications must be filed in the form in which they are received from applicants. In the past the Office has charged fees for these informal claims, resulting in an unnecessary financial burden on applicants. In the future, applicants will be permitted to file with the application a preliminary amendment limited to cancellation of such claims, which will diminish the number of claims to be considered in calculating the filing fee to be paid. Any other changes should be the subject of a separate amendment.

On the other hand, if a preliminary amendment cancelling such claims does not accompany the application at the time the application is filed, the notification of the fee deficiency will inform applicant of his option of correcting the error by (1) paying the additional fee, or (2) filing an amendment cancelling claims, thereby reducing the number of claims to be considered in calculating the fee. However, it should be noted that once the fee for claims is paid, no refund will be made even though applicant later decides that certain claims are informal or otherwise unnecessary.

This change, which will become effective December 1, 1978, should benefit both applicants and the Office. It will alleviate applicants' financial burden and will also result in more efficient examination.

DONALD W. BANNER,
Nov. 9, 1978. *Commissioner of Patents and Trademarks.*

[977 O.G. 8]

APPLICATION CONTENT

(36) USE OF METRIC SYSTEM OF MEASUREMENTS IN PATENT APPLICATIONS

In order to minimize the necessity in the future for converting dimensions given in the English system of measurements to the metric system of measurements when using printed patents as research and prior art search documents, all patent applicants are strongly encouraged to use either (1) only metric (S.I) units, or (2) English units together with their metric system equivalents, when describing their inventions in the specifications of patent applications. This practice, however, is not being made mandatory at this time.

The initials S.I. stand for "Systeme International d'Unites," the French name for the International System of Units, a modernized metric system adopted in 1960 by the International General Conference of Weights and Measures based on precise unit measurements made possible by modern technology.

This request is made as part of the long-range program for conversion to metric units currently being conducted by the Federal Government.

Publications dealing with the metric system are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. MARSHALL DANN,
July 1, 1974. *Commissioner of Patents.*

[924 O.G. 1104]

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(37) FILING OF NON-ENGLISH LANGUAGE APPLICATIONS

This notice is in response to inquiries regarding the filing of applications in a language other than English. The Office has received a few such applications in the past in emergency situations where the filing of a non-English language specification was the only possibility of saving a foreign priority date or preventing the running of a statutory bar. In such situations the Office practice has been to accord the application a filing date if it includes all of the component parts required by 35 U.S.C. 111, and to require applicant to submit a verified translation of the previously filed application within two months.

In view of the inquiries received, it is considered appropriate that the Office clarify and publicize its practice in this area to avoid misunderstandings.

Accordingly, beginning February 1, 1976, the Office will accord a filing date to an application meeting the requirements of 35 U.S.C. 111 even though some or all of the application papers, including the written description and the claims, is in a language other than English and hence does not comply with 37 CFR 1.52, *provided:*

(1) the oath or declaration is signed and physically attached to the specification and claims to which it refers; and

(2) the application papers are accompanied by a statement, in English, from the applicant, his attorney or agent, certifying that is has been considered necessary to file the non-English language application in order to save a foreign priority date or prevent the running of a statutory bar.

A verified English translation of the non-English language papers should either accompany the application papers or be filed in the Office no later than two months after a notice requesting the translation has been mailed by the Office.

A subsequently filed verified English translation must contain the complete identifying data for the application in order to permit prompt association with the papers initially filed. Accordingly, it is strongly recommended that the original application papers be accompanied by a cover letter and a self-addressed return post card, each containing the following identifying data in English: (*a*) applicant's name(s); (*b*) title of invention; (*c*) number of pages of specifications, claims, and sheets of drawings; (*d*) whether oath or declaration was filed and (*e*) amount and manner of paying the filing fee.

The translation must be a literal translation verified as such by the translator, and must be accompanied by a signed request from the applicant, his attorney or agent, asking that the verified English translation be used as the copy for examination purposes in the Office. If the verified English translation does not conform to idiomatic English and United States practice it should be accompanied by a preliminary amendment making the necessary changes without the introduction of new matter prohibited by 35 U.S.C. 132. In the event the verified literal translation is not timely filed in the Office the application will be regarded as abandoned.

It should be recognized that this practice is intended for emergency situations to prevent loss of valuable rights and should not be routinely used for filing applications. There are at least two reasons why this should not be used on a routine basis. First, there are obvious dangers to applicant and the public if he fails to obtain a correct literal translation. Second, the filing of a large number of applications

under the procedure will create significant administrative burdens on the Office.

The practice will be closely monitored to determine whether or not it should be continued.

C. MARSHALL DANN,
Dec. 31, 1975. *Commissioner of Patents and Trademarks.*

[942 O.G. 1552]

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(38) FILING OF COPIES OF PATENT APPLICATIONS

Beginning on October 1, 1978, the Office will accord a filing date to facsimile or other reproduced copies of United States national patent applications meeting the requirement of 35 U.S.C. 111, *provided:*

(1) the application was properly executed by the inventor(s) prior to transmission of the copy.
(2) the copy filed is a complete copy and bears a reproduction of applicant's signature, and
(3) the originally signed application is filed no later than two months after the facsimile or other reproduced copy is filed.

Authority for this practice is found in 35 U.S.C. 26 as interpreted by the District Court decisions *Neergaard* v. *Dann*, Civil Action No. 76–536, December 20, 1976 (D.D.C.) and *Dietzel et al.* v. *Commissioner of Patents and Trademarks*, Civil Action No. 75–0298, December 22, 1976 (D.D.C.).

In order to ensure prompt association with the copy of the application initially filed it is strongly recommended that the subsequently filed original application be accompanied by a cover letter signed by the applicant or the attorney or agent averring it is the original of the earlier filed facsimile application, identifying the application by applicant's name, title of invention, date of initial filing and serial number, if known.

It should be recognized that this practice is intended for emergency situations to prevent loss of valuable rights and should not be used routinely for filing applications.

The above procedure does not apply to international applications filed under the Patent Cooperation Treaty since procedures to cover unsigned international applications are already provided for in PCT Article 14(1)(a)(i) and (b) and PCT Rule 26.2.

DONALD W. BANNER,
Aug. 28, 1978. *Commissioner of Patents and Trademarks.*

[974 O.G. 14]

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(39) GRAPHICAL ILLUSTRATIONS IN THE SPECIFICATION

For convenience many applicants have been including graphs or other types of graphical illustrations in the text portion of the specification. These illustrations do not come within the purview of 37 C.F.R. 1.58 which permits tables and chemical and mathematical formulas in the specification in lieu of formal drawings. Frequently, these graphical illustrations do not have satisfactory reproduction characteristics. Moreover, these reproductions are generally less than satisfactory due to the fact that the illustrations are usually reduced in size in order to fit a column of the printed patent page. Accordingly, effective immediately, graphs and graphical type illustrations in the specification will be objected to under 37 C.F.R. 1.58(a) and drawings pursuant to 37 C.F.R. 1.81 will be required.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.
Jan. 12, 1978.

[967 O.G. 2]

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(40) MULTIPLE DEPENDENT CLAIMS AND NEW DRAWING FILING REQUIREMENTS

Introduction

On January 24, 1978, Public Law 94–131 (pages 108–115 of "Patent Laws," August 1976 issue) and the Patent Cooperation Treaty came into force. This public law amends the patent statute, Title 35, United States Code, by providing for procedures and requirements set forth in the Patent Cooperation Treaty. Some of these statutory amendments also effect the laws governing the processing and examination of regular United States national applications filed on and after January 24, 1978.

The amendments of the patent law which will affect *U.S. patent applications filed on and after January 24, 1978*, relate to two elements of the patent application: the claims and the drawings. With regard to claims, the amendments to 35 U.S.C. 41 and 112 provide for multiple dependent claims in accordance with PCT Rule 6.4. With regard to drawings, the amendment to 35 U.S.C. 113 changes the requirements for filing drawings in order to obtain a filing date in accordance with PCT Article 7.

Purpose

This memorandum establishes in more detail the new procedures required by the amended statute. Any questions concerning these instructions may be directed to either Mary Turowski (extension 7–3776) in the administration area or Louis Maassel (extension 7–3070) in the examining area.

Revised 37 CFR sections 1.75(c), (f) and (g); and 1.81 and 1.83(c) were published in the OFFICIAL GAZETTE of February 21, 1978.

MULTIPLE DEPENDENT CLAIMS

Generally, a multiple dependent claim is a dependent claim which refers back in the alternative to more than one preceding independent or dependent claim.

The second paragraph of 35 U.S.C. section 112 has been revised in view of the multiple dependent claim practice introduced by the Patent Cooperation Treaty. Thus, section 112 authorizes multiple dependent claims, as long as they are in the alternative form (e.g., "A machine according to claims 3 *or* 4, further comprising . . ."). Cumulative claiming (e.g., "A machine according to claims 3 *and* 4, further comprising . . .") is *not* permitted. A multiple dependent claim may refer in the alternative to only one set of claims. A claim such as "A device as in claims 1, 2, 3 or 4, made by a process of claims 5, 6, 7 or 8" is improper. Section 112 allows reference to only a particular claim. Furthermore, a multiple dependent claim may *not* serve as a basis for any other multiple dependent claim, either directly or indirectly. These limitations help to avoid undue confusion in determining how many prior claims are actually referred to in a multiple dependent claim.

The amendment of the second paragraph of section 112 further clarifies that the limitations or elements of each claim incorporated by reference into a multiple dependent claim must be considered separately. Thus, a multiple dependent claim, as such, does not contain all the limitations of all the alternative claims to which it refers, but rather, contains in any one embodiment only those limitations of the particular claim referred to for the embodiment under consideration. Hence, a multiple dependent claim must be considered in the same manner as a plurality of single dependent claims.

Restriction Practice

For restriction purposes, each embodiment of a multiple dependent claim will be considered in the same manner as a single dependent claim. Therefore, restriction may be required between the embodiments of a multiple dependent claim. Also, some embodiments of a multiple dependent claim may be held withdrawn while other embodiments are considered on their merits.

Handling of Multiple Dependent Claims by the Application Division

The Application Division will be responsible for verifying whether multiple dependent claims filed with the application are in proper alternative form, that they depend only upon prior independent and single dependent claims and also for calculating the amount of the filing fee. A new form, PTO–1360, has been designed to be used in conjunction with the current fee calculation form PTO–875.

Handling of Multiple Dependent Claims by the Examining Group Clerical Staff

The examining group clerical staff is responsible for verifying compliance with the statute and rules of multiple dependent claims added by amendment and for calculating the amount of any additional fees required. This calculation should be performed on form PTO–1360.

If a multiple dependent claim (or claims) is added in an amendment without the proper fee, the amendment will not be entered until the fee has been received. In view of the requirements for multiple dependent claims, no amendment

containing new claims or changing the dependency of claims will be entered before checking whether the paid fees cover the costs of the amended claims. The applicant, or his attorney or agent, will usually be contacted to pay the additional fee in the same manner as currently in existence for such defects. Where a letter is written in insufficient fee situations, a copy of the multiple dependent claim fee calculation form PTO–1360 will be included for applicant's information.

Handling of Dependent Claims by the Examiner

Should any multiple dependent claim be in an application filed prior to January 24, 1978 or include a claim association or claim structure that violates any of the prohibitions, the claim will be objected to as not being in proper form as required by 37 CFR 1.75 in the next Office action. Such an improper claim will not be further treated on the merits.

When referring to a singular dependent claim or a single embodiment of a multiple dependent claim, as when making a rejection, such a claim or embodiment will be referred to by using the number of all of the claims involved in that claim or embodiment, starting with the highest. For example, if claim 2 was dependent on claim 1, the notations would be 2/1. If in the same application, claim 3 was independent and claim 4 was multiple dependent on claims 2 or 3, the notations would be 4/2/1 and 4/3. Furthermore, if claim 5 depended from claim 4, the notations would be 5/4/2/1 and 5/4/3. Each of these embodiments will be treated individually. It would be possible for claim 4/2/1 to be rejected under section 102 and claim 4/3 to be indicated as avoiding the prior art and being allowable if rewritten in independent form. A number of embodiments may be grouped together if there is a common ground of rejection, but it must be clear how each embodiment is treated.

A claim, such as claim 4, will not be allowed until all embodiments covered thereby are allowable. If an embodiment of a multiple dependent claim avoids the art while other embodiments are rejected over prior art, a statement will be made that that embodiment avoids the art and would be allowed if rewritten in separate dependent or independent form. Wording similar to the following may be used:

> "Embodiment ———— would be allowable if rewritten as a proper dependent or independent claim which contains only the limitations of this embodiment."

Calculation of Fees When Multiple Dependent Claims are Presented, Use of Form PTO–1360

To assist in the computation of the fees for multiple dependent claims, a separate "Multiple Dependent Claim Fee Calculation Sheet," form PTO–1360, has been designed for use with the current "Patent Application Fee Determination Record," form PTO–875. Form PTO–1360 will be placed in the file wrapper by the Application Division where multiple dependent claims are in the application as filed. If multiple dependent claims are not included upon filing, but are later added by amendment, the examining group clerical staff will place the form in the file wrapper. If there are multiple dependent claims in the application, the total number of independent and dependent claims for fee purposes will be calculated on form PTO–1360 and the total number of claims and number of independent claims will then be placed on form PTO–875 for final fee calculation purposes.

If at least $65 is included with the application on filing, but the total fee is insufficient, a "Notice of Insufficient Fee," form PTO–1094, is placed in the file wrapper by the Application Division as is currently done. The notice will be mailed by the examining group in accordance with established procedures.

Calculating Fees for Multiple Dependent Claims

Proper Multiple Dependent Claims

Amended section 41(a) of title 35, U.S.C., provides that claims in multiple dependent form cannot be considered as single dependent claims for the purpose of calculating fees. Thus, a multiple dependent claim would be considered to be that number of dependent claims to which it refers. Any proper claim depending directly or indirectly from a multiple dependent claim would also be considered as the same number of dependent claims as referred to in the multiple dependent claim from which it depends.

Improper Multiple Dependent Claim

If any multiple dependent claim is improper, Application Division may indicate that fact by placing an encircled numeral "1" in the "Dep. Claims" column of form PTO–1360. The fee for any improper multiple dependent claim, whether it is defective for not being in the alternative form or for being directly or indirectly dependent on a prior multiple dependent claim, will only be one, since only an objection to the form of such a claim will normally be made.

This procedure also greatly simplifies the calculation of fees. Any claim depending from an improper multiple dependent claim will also be considered to be improper and be counted as one dependent claim.

FEE CALCULATION EXAMPLE

Claim Number	
1	Independent
2	Dependent on claim 1
3	Dependent on claim 2
4	Dependent on claim 2 or 3
5	Dependent on claim 4
6	Dependent on claim 5
7	Dependent on claim 1 or 4
8	Dependent on claim 1 or 5
9	Dependent on claim 8
10	Independent
11	Dependent on claim 1 or 10
12	Dependent on claim 1 and 10

FORM PTO-1360 (1/78) U.S. DEPT. COMM. PAT. AND TMK. OFF.

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET (FOR USE WITH FORM PTO-875)

	AS FILED		AFTER 1ST AMDT		AFTER 2ND AMDT	
	IND.	DEP.	IND.	DEP.	IND.	DEP.
1	1					
2		1				
3		1				
4		2				
5		2				
6		2				
7		(1)				
8		(1)				
9		(1)				
10	1					
11		2				
12		(1)				
TOTAL IND.	2					
TOTAL DEP.	14	↵		↵		↵
TOTAL CLAIMS	16					

Comments on Fee Calculation Example

Claim 1.—This is an independent claim; therefore, a numeral "1" is placed opposite claim number 1 in the "Ind." column.

Claim 2.—Since this is a claim dependent on a single independent claim, a numeral "1" is placed opposite claim number 2 in the "Dep." column.

Claim 3.—Claim 3 is also a single dependent claim, so a numeral "1" is placed in the "Dep." column.

Claim 4.—Claim 4 is a proper multiple dependent claim. It refers directly to two claims in the alternative, namely, claims 2 or 3. Therefore, a numeral "2" to indicate direct reference to two claims is placed in the "Dep." column opposite claim number 4.

Claim 5.—This claim is a singularly dependent claim depending from a multiple dependent claim. For fee calculation purposes, such a claim is counted as being that number of claims to which direct reference is made in the multiple dependent claim which it depends. In this case, the multiple dependent claim number 4 it depends from counts as 2 claims; therefore, claim 5 also counts as 2 claims. Accordingly, a numeral "2" is placed opposite claim number 5 in the "Dep." column.

Claim 6.—Claim 6 depends indirectly from a multiple dependent claim 4. Since claim 4 counts as 2 claims, claim 6 also counts as 2 dependent claims. Consequently, a numeral "2" is placed in the "Dep." column after claim 6.

Claim 7.—This claim is a multiple dependent claim since it refers to claims 1 or 4. However, as can be seen by looking at the "2" in the "Dep." column opposite claim 4, claim 7 directly depends from a multiple dependent claim. This practice is improper under 35 U.S.C. 112 and Rule 1.75(c). Following the procedure for calculating fees for improper multiple dependent claims, a numeral "1" is placed in the "Dep." column with a circle drawn around it to alert the examiner that the claim is improper.

Claim 8.—This claim is a multiple dependent claim since it refers to claims 1 or 5. However, since claim 5 depends from multiple dependent claim 4, claim 8 indirectly depends from multiple dependent claim 4 through claim 5. This practice is improper. See MULTIPLE DEPENDENT CLAIMS, paragraph 2, above. Consequently, a numeral "1" is placed in the dependent claim column with a circle drawn around it.

Claim 9.—Claim 9 is improper since it depends from an improper claim. If the base claim is in error, this error cannot be corrected by adding additional claims depending therefrom. Therefore, a numeral "1" with a circle around it is placed in the "Dep." column.

Claim 10.—Here again we have an independent claim which is always indicated with a numeral "1" in the "Ind." column opposite the claim number.

Claim 11.—This claim refers to two independent claims in the alternative. A numeral "2" is therefore placed in the "Dep." column opposite claim 11.

Claim 12.—Claim 12 is a dependent claim which refers to two claims in the conjunctive ("1 *and* 10") rather than in the alternative ("1 *or* 10"). This form is improper under 35 U.S.C. 112 and Rule 1.75(c). Accordingly, since claim 12 is improper, an encircled numeral "1" is placed in the "Dep." column opposite claim 12.

Calculation of Filing Fee

After the numbers of "Ind." and "Dep." claims are noted on form PTO–1360, each column is added. In this example, there are 2 independent claims and 14 dependent claims or a total of 16 claims. The number of independent and total claims can then be placed on form PTO–875 and the fee calculated. In this example, the total number of claims 16 minus 10 leaves 6, which is multiplied by $2 for an additional total claim fee of $12. The total number of independent claims in the example is 2, which minus 1 is 1, which times the $10 rate is $10. The total filing fee is therefore $65 + $12 + $10, or a total of $87.

DRAWING REQUIREMENTS

Revised 35 U.S.C. 113 relaxes the previous requirements for submission of drawings on filing under certain conditions. The first sentence of 35 U.S.C. 113 does require a drawing to be submitted upon filing where such drawing is necessary for the understanding of the invention. In this situation the lack of a drawing renders the application incomplete and as such, the application cannot be given a filing date until the drawing is received. The second sentence of 35 U.S.C. 113 deals with the situation wherein a drawing is not necessary for the understanding of the invention but the case admits of illustration and no drawing was submited on filing. The lack of the drawing in this situation does not render the application incomplete but rather is treated much in the same manner as an informality. The examiner should require such drawings in almost all such instances. Such drawings could be required during the processing of the application but do not have to be furnished at the time the application is filed. The applicant is allowed at least two months from the date of the letter requiring drawings to submit them.

Handling of Drawing Requirements Under the First Sentence of 35 U.S.C. 113

Under the revised provisions the Application Division examiner will continue to make the initial decision in all new applications as to whether a drawing is "necessary" under the first sentence of 35 U.S.C. 113.

If during examination an examiner feels that a filing date should not have been granted in an application because it does not contain drawings, the matter will be brought to the attention of the Supervisory Primary Examiner (SPE) for review. If the SPE decides that drawings are required to understand the subject matter of the invention, the SPE will return the application to the Application Division with a memorandum requesting cancellation of the filing date and identifying the subject matter required to be illustrated.

Handling of Drawing Requirements Under the Second Sentence of 35 U.S.C. 113

35 U.S.C. 113 also deals with the situation wherein the drawing is not necessary for the understanding of the invention, but the subject matter admits of illustration by a drawing and the applicant has not furnished a drawing. The lack of the drawing in this situation does not render the application incomplete but rather is treated as an informality. A filing date will be accorded with the original presentation of the papers, despite the absence of drawings. In these situations, a drawing or further illustration will normally be required by the examiner. This may be done either prior to examination in a separate letter or in the first Office action and may be handled in much the same manner as informal photocopy drawings are presently handled. The examiner should require drawings where appropriate as early as possible, since the possession of the drawing at that time would facilitate the examination process. A letter requiring drawings may contain wording similar to the following:

> "The examiner has decided that the subject matter of this application admits of illustration by a drawing and that a drawing would facilitate the understanding of the subject matter disclosed. (Continue with a specific mention of those items of which drawings are desired.) Applicant is required to furnish a drawing under 37 CFR 1.81. (Incorporate in Office action or set two-month period for response.)"

The applicant will be given at least two months from the date of such requirement to submit drawings. If the requirement for drawings is included in an Office action, the time for supplying the drawings will be the same as the time of response to the Office action. Upon receipt of the drawing within the period set, the examiner will check the drawings for new matter. If new matter is included, the drawing will not be entered. It will be objected to as containing new matter. A new drawing without such new matter may be required if the examiner still feels a drawing is needed under 37 CFR 1.81 or 1.83. The examiner's decision would be reviewable by petition to the Commissioner under Rule 1.181. The decision on such a petition would be handled by the Group Director. If a drawing is not timely received in response to a letter from the examiner which requires a drawing, the application becomes abandoned for failure to respond.

Date Feb. 8, 1978. RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

[968 O.G. 7]

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(41) EXECUTION AND FILING OF PATENT APPLICATIONS

This notice is intended as a reminder that United States patent applications which have not been prepared and exe-

cuted in accordance with the requirements of Title 35 of the United States Code and Title 37 of the Code of Federal Regulations may be denied a filing date as a complete application or may be, in appropriate circumstances, stricken from the files as having been improperly executed and/or filed. Although the statute and the rules have been in existence for many years, the Office continues to receive a number of applications which have been improperly executed and/or filed. Since the improper execution and/or filing of patent applications can ultimately result in a loss of rights it is appropriate to re-emphasize the importance of proper execution and filing.

Attention is invited to the fact that 35 U.S.C. 111 requires that "(t)he application must be signed by the applicant . . ." The same requirement appears in 37 CFR 1.57 which specifies that the signature to the oath or declaration "will be accepted as the signature to the application provided the oath or declaration . . . is attached to and refers to the specification and claims to which it applies. Otherwise the signature must appear at the end of the specification after the claims."

It should be carefully noted that the application "signed by the applicant" must be a *complete* application and cannot be simply an oath or declaration signed without the remainder of the application. As an example, it is improper for an applicant to sign an oath or declaration which is later attached to a specification and/or claims unless the specification is also signed after the claims. See 37 CFR 1.56(c) which provides that "(a)ny application may be stricken from the files if: (1) Signed or sworn to in blank, or without actual inspection by the applicant . . ."

The provisions of 35 U.S.C. 363 for filing an international application under the Patent Cooperation Treaty (PCT) which designates the United States and thereby has the effect of a regularly filed United States national application, except as provided in 35 U.S.C. 102(e), are somewhat different than the provisions of 35 U.S.C. 111. Under 35 U.S.C. 363 and PCT Article 11(1), the signature of the inventor is not required to obtain a filing date but must be submitted later. The oath or declaration requirements for an international application before the Patent and Trademark Office are set forth in 37 CFR 1.70.

The requirement that applicant sign "the application" also precludes alterations to the application after execution. See 37 CFR 1.52(c) which states that "(n)o . . . alterations are permissible after execution of the application papers." It is therefore necessary that the application, including the oath or declaration, be executed in the form in which it is intended to be filed since it is improper for anyone, including counsel, to complete or otherwise alter application papers, including the oath or declaration, after the applicant has executed the same. Section 1.56(c) provides that "(a)ny application may be stricken from the files if: . . . (2) Altered or partly filled in after being signed or sworn to."

In summary, it is emphasized that the application filed must be the application executed by the applicant and it is improper for anyone, including counsel, to alter, rewrite, or partly fill in any part of the application, including the oath or declaration, after execution by the applicant. This reminder should particularly be brought to the attention of foreign applicants by their United States counsel since the United States law and practice in this area may differ from that in other countries. Hopefully, this Notice will serve as an adequate reminder so that applicants will not lose rights through the improper execution and/or filing of patent applications.

LUTRELLE F. PARKER,
Oct. 11, 1979. *Acting Commissioner of Patents and Trademarks.*

[988 O.G. 2]

(42) USE OF SYMBOL "Ø" IN PATENT APPLICATIONS

The Greek letter Phi has long been used as a symbol in equations in all technical disciplines. It further has special uses which include the indication of an electrical phase or clocking signal as well as an angular measurement. The recognized symbols for the upper and lower case Greek Phi characters, however, do not appear on most typewriters. This apparently has led to the use of a symbol composed by first striking a zero key and then backspacing and striking the "cancel" or "slash" key to result in "Ø" which is an approximation of accepted symbols for the Greek character Phi. In other instances the symbol is composed using the upper or lower case letter "O" with the "cancel" or "slash" superimposed thereon by backspacing or is simply handwritten in a variety of styles. These expedients result in confusion because of the variety of type sizes and styles available on modern typewriters.

In recent years, the growth of data processing has seen the increasing use of this symbol ("Ø") as the standard representation of zero. The "slashed" or "cancelled zero" is used to indicate zero and avoid confusion with the upper case letter "O" in both text and drawings.

Thus, when the symbol "Ø" in one of its many variations, as discussed above, appears in patent applications being prepared for printing, confusion as to the intended meaning of the symbol arises. Those (such as examiners, attorneys, and applicants) working in the art can usually determine the intended meaning of this symbol because of their knowledge of the subject matter involved, but editors preparing these applications for printing have no such specialized knowledge and confusion arises as to which symbol to print. The result, at the very least, is delay until the intended meaning of the symbol can be ascertained.

Since the Office does not have the resources to conduct a technical editorial review of each application before printing, and in order to eliminate the problem of printing delays associated with the usage of these symbols, any question about the intended symbol will be resolved by the editorial staff of the Office of Publications by printing the symbol "Ø" whenever that symbol is used by the applicant. Any Certificate of Correction necessitated by the above practice will be at the **patentee's expense (37 CFR 1.323) because the intended symbol was not accurately presented by the Greek upper or lower case Phi letters (Φ, φ) in the patent application.**

RICHARD J. SHAKMAN,
Dec. 20, 1978. *Assistant Commissioner for Administration.*

[978 O.G. 152]

EXAMINATION OF APPLICATIONS

(43) EXAMINATION OF CLAIMS FOR PATENTABILITY UNDER 35 U.S.C. 103

The purpose of this notice is to inform the public of the current Patent and Trademark Office policy concerning determinations of obviousness under 35 U.S.C. 103 in view of the recent Supreme Court decision in *Sakraida* v. *Ag Pro*, 189 USPQ 449 (1976).

The following text is a copy of a memorandum issued to all patent examining personnel relative to this topic.

"A clarification of the policy of the Patent and Trademark Office in the examination of claims for patentability under 35 U.S.C. 103 seems in order at this time in view of the Supreme Court's decision in *Sakraida* v. *Ag Pro*, 189 USPQ 449 (decided April 20, 1976) which is similar to the Court's earlier decision in *Anderson's-Black Rock, Inc.* v. *Pavement Salvage Co.*, 163 USPQ 673 (decided December 8, 1969).

"Office policy has consistently been to follow *Graham* v. *John Deere Co.*, 148 USPQ 459 (decided February 21, 1966) in the consideration and determination of obviousness under 35 U.S.C. 103. The three factual inquiries enunciated therein as a background for determining obviousness are as follows:

1. Determination of the scope and content of the prior art;
2. Ascertaining the differences between the prior art and the claims in issue; and
3. Resolving the level of ordinary skill in the pertinent art.

"Attention is directed to MPEP Section 706 for a more complete discussion of the application of the Graham test.

"The Supreme Court reaffirmed and relied upon the Graham three-pronged test in its consideration and determination of obviousness in the fact situations presented in both the Ag Pro and Black Rock decisions. In each case, the Court went on to discuss whether the claimed combinations produced a 'new or different function' and a 'synergistic result,' but clearly decided whether the claimed inventions were unobvious on the basis of the three-way test in Graham. Nowhere in its decisions in those cases does the Court state

that the 'new or different function' and 'synergistic result' tests supersede a finding of unobviousness or obviousness under the Graham test.

"Accordingly, examiners should continue to apply the test for patentability under 35 U.S.C. 103 set forth in Graham. It should be noted that the Supreme Court's application of the Graham test to the fact circumstances in Ag Pro is somewhat stringent, as it was in Black Rock."

July 8, 1976.

C. MARSHALL DANN,
Commissioner of Patents & Trademarks.

[949 O.G. 3]

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(44) CLAIMS COPIED FROM PATENTS

Applicants and their attorneys or agents are reminded of the requirement of Rule 205(b) (37 CFR 1.205(b)) of the Rules of Practice that "Where an applicant presents a claim copied or substantially copied from a patent, he must at the time he presents the claim, identify the patent, give the number of the patented claim, and specifically apply the terms of the copied claim to his own disclosure, unless the claim is copied in response to a suggestion by the Office."

The requirement of Rule 205(b) (37 CFR 1.205(b)) applies to claims copied in an application at the time of filing as well as to claims copied in an amendment to a pending application. If an applicant, attorney, or agent presents a claim copied or substantially copied from a patent without complying with Rule 205(b) (37 CFR 1.205(b)) the examiner may be led into making an action different from what he would have made had he been in possession of all the facts. Therefore, failure to comply with Rule 205(b) (37 CFR 1.205(b)), when submitting a claim copied from a patent, may result in the issuance of an Order To Show Cause why the application should not be stricken from the files of the Patent Office. If a satisfactory answer is not filed within the period set in the Order it may be necessary to strike the application under Rule 56 (37 CFR 1.56).

This reminder is being published to emphasize to applicants and their attorneys or agents the importance of complying with the requirement of Rule 205(b) (37 CFR 1.205(b)) at the time the claim is copied.

WILLIAM FELDMAN,
Apr. 10, 1974. *Acting Assistant Commissioner for Patents.*

[922 O.G. 442]

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(45) TRANSLATIONS OF FOREIGN LANGUAGE REFERENCES

Frequently, Office actions cite references that are in a foreign language. In the event a translation of the entire text or portion of the text of the reference is readily available in the examiners' search files, a copy of the translation will normally be included with the Office action. However, applicants are cautioned that the inclusion of a translation with a foreign language reference should not be construed to mean that the examiner used or relied on the translation, or that it is accurate or an official translation made by the Patent and Trademark Office.

While this service may be infrequent, it could be increased by the submission of translations by the applicant to the Office. Accordingly, it is requested that translations of foreign language references be transmitted to the Office, and in particular be transmitted with the response to the Office action or in a separate envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. In addition, it would be of great assistance to the Office in filing the translation, if the translation carried the following: 1. an identification of the foreign language reference and, where possible, 2. its location in the examiners' search files (e.g. location should be known if reference was cited in Office action). If identifying information is not available, the incoming translation should carry the name "Scientific Library" thereon so that it can be processed by the Library.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Date: Oct. 26, 1977.

[964 O.G. 24]

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(46) RESTRICTION BETWEEN INVENTIONS

The practice set out in the notice of June 20, 1968 (852 O.G. 509) is hereby revised as follows.

Under the statute an application may properly be required to be restricted to one of two or more claimed inventions only if they are able to support separate patents and they are either independent or distinct.

If it is demonstrated that two or more claimed inventions have no disclosed relationship ("independent"), restriction should be required, and it is not necessary to further show that the claimed inventions are distinct. If it is demonstrated that two or more claimed inventions have a disclosed relationship ("dependent"), then a showing of distinctness is required to substantiate a restriction requirement.

Where inventions are neither independent nor distinct, one from the other, or they are not sufficiently different to support more than one patent, their joinder in a single application must be permitted.

Every requirement to restrict has two aspects, (1) the reasons (as distinguished from the mere statement of conclusion) why the inventions *as claimed* are either independent or distinct, and (2) the reasons for insisting upon restriction therebetween.

In order to support a requirement to restrict between combination and subcombination inventions, two-way distinctness must be demonstrated.

If it can be shown that a combination, as claimed (1) does not require the particulars of the subcombination as claimed for patentability, and (2) the subcombination can be shown to have utility either by itself or in other and different relations, the inventions are distinct. When these factors cannot be shown, such inventions are not distinct.

Two or more claimed subcombinations, disclosed as usable together in a single combination, and which can be shown to be separately usable, are usually distinct from each other.

In applications claiming inventions in different statutory categories only one-way distinctness is needed to support a restriction requirement. For example, in applications containing claims to both process and apparatus, distinctness may be shown if (1) the process as claimed can be practiced by hand or by another materially different apparatus, or (2) the apparatus as claimed can be used to practice another and materially different process.

As in the notice of May 1, 1974 concerning Markush-Type claims (922 O.G. 1016), if the search and examination of an entire application can be made without serious burden, the examiner is encouraged to examine it on the merits, even though it includes claims to distinct or independent inventions.

WILLIAM FELDMAN,
Apr. 9, 1975. *Deputy Assistant Commissioner for Patents.*

[934 O.G. 450]

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(47) REVISED PRACTICE RE MARKUSH-TYPE CLAIMS

This notice deals with Markush-type generic claims which include a plurality of alternatively usable substances or members. In most cases, a recitation by enumeration is used because there is no appropriate or true generic language. In many cases, the Markush-type claims include independent and distinct inventions. This is true where two or more of the members are so unrelated and diverse that a prior art reference anticipating the claim with respect to one of the members would not render the claim obvious under 35 U.S.C. 103 with respect to the other member(s).

In applications containing claims of that nature, the Examiner may require a provisional election of a single species prior to examination on the merits. The provisional election will be given effect in the event that the Markush-type claim should be found not allowable. Following election, the Markush-type claim will be examined fully with respect to the elected species and further to the extent necessary to determine patentability. Should the Markush-type claim be found not allowable, examination will be limited to the Markush-type claim and claims to the elected species, with claims drawn to species patentably distinct from the elected species held withdrawn from further consideration.

As an example, in the case of an application with a Markush-type claim drawn to the compound C-R, wherein R is a radical selected from the group consisting of A, B, C, D, and E, the Examiner may require a provisional election of a single species, CA, CB, CC, CD, or CE. The Markush-type claim would then be examined fully with respect to the elected species and any species considered to be clearly unpatentable over the elected species. If on examination the elected species is found to be anticipated or rendered obvious by prior art, the Markush-type claim and claims to the elected species shall be rejected, and claims to the non-elected species would be held withdrawn from further consideration. As in the prevailing practice, a second action on the rejected claims would be made final.

On the other hand, should no prior art be found that anticipates or renders obvious the elected species, the search of the Markush-type claim will be extended. If prior art is then found that anticipates or renders obvious the Markush-type claim with respect to a ***non-elected species***, the Markush-type claim shall be rejected and claims to the non-elected species held withdrawn from further consideration. The prior art search, however, will not be extended unnecessarily to cover all non-elected species. Should applicant, in response to this rejection of the Markush-type claim, overcome the rejection, as by amending the Markush-type claim to exclude the species anticipated or rendered obvious by the prior art, the amended Markush-type claim will be re-examined. The prior art search will be extended to the extent necessary to determine patentability of the Markush-type claim. In the event prior art is found during the re-examination that anticipates or renders obvious the amended Markush-type claim, the claim will be rejected and the action made final. Amendments submitted after the final rejection further restricting the scope of the claim will not be entered.

If the members of the Markush group are sufficiently few in number or so closely related that a search and examination of the entire claim can be made without serious burden, the Examiner is encouraged to examine all claims on the merits, even though they are directed to independent and distinct inventions. In such a case, the Examiner will not follow the above procedure and will not require restriction.

This notice supersedes the practice set out in 922 O.G. 1016, dated May 1, 1974.

Although the above practice is now in effect, a rule change proposal is also being considered to provide for prosecution of multiple inventions in a single patent application by submission of additional fees.

DONALD W. BANNER,

Oct. 23, 1978. *Commissioner of Patents and Trademarks.*

[976 O.G. 128]

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(48) Revised Procedures for Recording Searches and Considerations of Certain Prior Art

In order to provide a more complete, accurate and uniform record of what has been searched and considered by the examiner for each application the Patent and Trademark Office has established revised procedures for recording search data in the application file. Such a record is of importance to anyone evaluating the strength and validity of a patent, particularly if the patent is involved in litigation. These new procedures will also facilitate the printing of certain search data on patents.

Under the revised procedures, searches are separated into two categories and listed, as appropriate, in either the "SEARCHED" box or a newly added "SEARCH NOTES" box on the file jacket.

Until file jackets can be reprinted to include a second search data box, all file jackets for new applications will have the "SEARCH NOTES" box stamped therein by the Mail Room. If additional space is required, entries will be continued on the outside right flap of the file jacket.

The revised procedures will apply to all new applications in which the first search is made after April 1, 1977 and do not affect the manner in which references are listed on the form PTO–892, "Notice of References Cited." Appropriate changes in the Manual of Patent Examining Procedure will be made.

A. "SEARCHED" Box Entries

Search entries made here, except those for search updates (see item A. 3 below), will be printed under "Field of Search" on the patent front page. Therefore, the following searches will be recorded in the "SEARCHED" box by the examiner along with the date and the examiner's initials, according to the following guidelines:

1. *A complete search of a subclass*, including all United States and foreign patent documents and other publications placed therein.
   The complete classification (class and subclass) will be recorded.
2. *A limited search of a subclass*, for example, a search that is restricted to an identifiable portion of the patent documents placed therein. If, however, only the publications in a subclass are searched, such an entry is to be made under "SEARCH NOTES" rather than under "SEARCHED." (See item B. 4 below.)
   The class and subclass, followed by the information defining the portion of the subclass searched in parenthesis, will be recorded.
3. *An update of a search previously made.*
   This search entry will be recorded in a manner to indicate clearly which of the previously recorded searches have been updated, followed by the expression "(updated)." Search update, entries, although recorded in the "SEARCHED" box, will not be printed.
   When a search made in a parent application is updated during the examination of a continuing application, those searches updated, followed by "(updated from parent S.N. ————————)" will be recorded. If the parent has been patented, the patent number "Pat. N. ————————" instead of serial number in the above phrase will be recorded.
4. *A mechanized search* of a file of documents in a specific art, conducted by using key terms to retrieve documents. The name of the mechanized search system as it appears in the following list will be recorded along with the expression "MS File" to indicate mechanized search file.

Mechanized Search Systems

Termatrex Systems:

Automatic Fuel Controls
Boots & Shoes
Chemical Testing
Combined Fasteners
Electrical Contact Materials
Surface Bonding Using Critical Metal

Edge-Notched Card System:

Fluid Devices

Punch Card Systems:

Electrolysis
Organometallics
Steroids

Computer Controlled Microfiche Search Systems (CCMSS):

A-D Convertors
Digital Data Processing Systems
Special Purpose Digital Processing Systems

When a search with a Termatrex or Edge-Notched card system is conducted, the examiner will complete form PTO–1041 in two copies, recording all queries searched, even those which yield only non-relevant documents. All documents returned by the system in response to a query which are not actually reviewed will have an "X" drawn through their associated access and patent numbers. The examiner will place one copy of the form PTO–1041 in the application file on the right flap of the file jacket, the other copy of the form PTO–1041 will be forwarded to the Office of Search Systems.

When conducting a search with a Punched Card system, the examiner will place in the application file the Code Sheet on which the terms searched have been marked along with the machine tape listing the documents retrieved. Any document not actually reviewed will have an "X" drawn through that document's number on the listing.

When conducting a search with the CCMSS search systems, the machine-produced search report, which lists

the terms and tagged documents, will be placed in the application file on the right flap of the file jacket. Any tagged document not actually reviewed will have an "X" drawn through that document number on the search report.

B. *"SEARCH NOTES" Box Entries*

Entries made in the "SEARCH NOTES" box are of equal importance to those placed in the "SEARCHED" box; however, these entries will not be printed on any resulting patent. They are intended to complete the application file record of areas and/or documents considered by the examiner in the search. The examiner will record the following searches in the "SEARCH NOTES" box and in the manner indicated, with each search dated and initialled:

1. *A cursory search,* or scanning, of a subclass, i.e., a search usually made to determine if the documents classified there are relevant.

   The classification will be recorded, followed by "(Cursory)."
2. *A consultation* with other examiners to determine if relevant search fields exist in their areas of expertise. The class and subclass discussed, if not actually searched, will be recorded, followed by "(consulted)." This entry may also include the name of the examiner consulted and the art unit.
3. *A search of a publication* not located within the classified patent file, e.g., a library search, a text book search, a Chemical Abstracts search, etc. The following data will be recorded for each type of literature search:
   a. *Abstracting publications,* such as Chemical Abstracts or the Engineering Index—the name of the publication, the list of terms consulted in the index and the period covered will be recorded.
   b. *Periodicals*—The title and period or volumes covered, as appropriate will be recorded.
   c. *Books*—The title and author, edition or date, as appropriate, will be recorded.
   d. *Other types of literature* not specifically mentioned above (i.e., catalogs, manufacturer's literature, private collections, etc.).

   Unless the search is a cursory or browsing one, data as necessary to provide unique identification of material searched will be recorded. Specific materials cited by the examiner will not be recorded again here.
   e. *Computer search in Scientific Library*—An on-line computerized literature searching service which uses key terms and index terms to locate relevant publications in many large bibliographic data bases is available to examiners in the Scientific Library of the Patent and Trademark Office. A member of the library staff is assigned to assist examiners in selecting key terms and to program the search.

   There are two on-line search systems: The Lockheed Information Systems and the SDC Search Service.

   These search systems include many data bases.

   A copy of the search printout will be made and placed in the application file, attached to the right flap of the file jacket.

   The examiner will also indicate which publications were reviewed by initialling and dating the copy of the printout in the left margin adjacent to each reviewed publication. If only an abstract of a document was reviewed, the note of "ck'ed abst." will be made next to the initials and date. If the complete document was reviewed, the note "ck'ed doc." will be placed with the initials and date.
4. A search of only the *publications in a subclass.* The class and subclass followed by "(publications only)" will be recorded.
5. *A review of art cited in a parent application* or in an original patent, as required for all continuing and reissue applications, or a review of art cited in related applications or patents mentioned within the specification, such as those included to provide background of the invention.

   The serial number of a parent application that is still pending or abandoned, followed by "refs. checked" or "refs. ck'ed" will be recorded. If for any reason not all of the references are checked because they are not available or clearly not relevant, such exceptions will be noted.

   The patent number of a parent or related application that was patented or of an original patent now being reissued will be recorded along with the expressions "refs. checked" or "refs. ck'ed."

C. *Not Recorded*

The following data will not be recorded in either of the search boxes, but will be noted in the application file as indicated below.

1. *Citations of prior art by applicants conforming to Rule 98 and the practice thereunder.*

   In each instance where all prior art referred to in a paper placed in the application file is considered, the examiner will place the notation "all ck'ed" and his or her initials adjacent to the citation.
2. *Citations of prior art by applicants not conforming to Rule 98 and the practice thereunder.*

   In each instance where an examiner considers, but does not cite on form PTO–892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference. If all the references referred to in such a paper are reviewed, the examiner will place the notation "all ck'ed" and his or her initials adjacent the citation. If included in the specification, the examiner will write his or her initials adjacent to any reference(s) checked and enter "checked" or "ck'ed" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" or "ck'ed" will be entered adjacent to the citation(s) or wherever possible to indicate clearly those checked.

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

Date: 2–22–77.

[956 O.G. 1546]

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(49) **Prior Art Cited by Applicants**

Effective immediately, applicants are encouraged to use new form PTO–1449, "List of Prior Art Cited by Applicant," when preparing a prior art statement under 37 CFR 1.97–1.99. A copy of the form is included herewith from which suitable reproductions can be made. This form, which will enable applicants to provide the PTO with a uniform listing of prior art citations, supersedes form PTO–3.72.

While the filing of prior art statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 CFR 1.97 through 1.99. To be considered a proper prior art statement, form PTO–1449 shall be accompanied by an explanation of relevance of each listed item, a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), and should be submitted in a timely manner as set out in MPEP Sec. 609.

Examiners will consider all prior art citations submitted in conformance with 37 CFR 1.98 and MPEP Sec. 609 and place their initials adjacent the citations in the boxes provided on the form. Examiners will also initial citations not in conformance with the guidelines which may have been considered. A reference may be considered by the examiner for any reason whether or not the citation is in full conformance with the guidelines. A line will be drawn through a citation if it is not in conformance with the guidelines *and* has not been considered. A copy of the submitted form, as reviewed by the examiner, will be returned to the applicant with the next communication. The original of the form will be entered into the application file.

Each citation initialed by the examiner will be printed on the issued patent in the same manner as prior art cited by the examiner on form PTO–892.

The reference designations "AA," "AB," etc. (referring to Applicant's reference *A*, Applicant's reference *B*, etc.) will be used by the examiner in the same manner as examiner's

reference designations "A," "B," "C," etc. on Office Action Form PTO–1142.

WILLIAM FELDMAN,
Aug. 15, 1980. *Deputy Assistant Commissioner for Patents.*

[998 O.G. 9]

(50) EXPRESS ABANDONMENTS

Experience over the past several months has indicated the need to clarify and re-emphasize existing practice regarding express abandonments submitted under 37 CFR 1.138.

Since 1966, when Rule 138 was revised, it is no longer required that the applicant and the assignee of record, if any, sign an express abandonment. The revised rule indicates that a patent application may be expressly abandoned by an attorney or agent of record. Therefore, prior to signing a declaration of express abandonment of a patent application, it is imperative that the attorney or agent of record exercise every precaution in ascertaining that the abandonment of the application is in accordance with the desires and best interests of the applicant. Moreover, special care should be taken to insure that the appropriate application from a group of related applications is correctly identified in the letter of abandonment.

A declaration of abandonment signed by the applicant or his attorney or agent of record becomes effective when an appropriate official of the Office takes action in recognition of the declaration. When so recognized, the date of abandonment may be the date of recognition or a different date if so specified in the declaration itself. For example, where a continuing application is filed with a request to abandon the prior application as of the filing date accorded the continuing application, the date of the abandonment of the prior application will be in accordance with the request once it is recognized.

Action in recognition of an express abandonment may take the form of an acknowledgement by the examiner or the Patent Issue Division of the receipt of the express abandonment, indicating that it is in compliance with 37 CFR 1.138 (see Section 711.01 MPEP). Alternatively, recognition may be no more than the transfer of drawings to a new application pursuant to instructions which include a request to abandon the application containing the drawings to be transferred (see 37 CFR 1.60 and Section 608.02(1) MPEP).

It is suggested that divisional applications being submitted under 37 CFR 1.60 be reviewed before filing to ascertain whether the prior application should be abandoned. Recent experience reveals that some divisional applications are being filed under 37 CFR 1.60 with requests to transfer the drawings from, and abandon, the prior application. Following the recognition of the abandonment, the attorney or agent signing the request informs the Office that the request was made by mistake for any one of a number of reasons. Care should be exercised in situations such as these as the Office looks on express abandonments as acts of deliberation, intentionally performed.

Another common situation involves the submission of an express abandonment following the allowance of an application. The express abandonment may not be recognized unless it is actually received by appropriate officials in time to act before the date of issue. In those cases, once a patent number and issue date have been assigned to the application, it is considered too late to act on the express abandonment unless a petition under Rule 313(b) or Rule 183 is granted (see Section 711.01 of MPEP).

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Apr. 7, 1975.

[934 O.G. 2]

(51) NOTICE OF ABANDONMENT FOR FAILURE TO PROSECUTE APPLICATION

Effective immediately the Patent Examining Corps will mail a communication, concerning all applications becoming abandoned in the Corps for failure to prosecute, to the correspondence address of record.

The communication to be mailed will merely comprise a copy of the first page of the Office action, to which applicant failed to properly respond, the copy including stamped language thereon indicating that the application has become abandoned and the date that the copy was mailed. The language stamped on the copy will be as follows: APPLICATION HAS BECOME ABANDONED. THIS NOTICE MAILED: ————————. In no case will the mere failure to receive a notice of abandonment affect the status of an abandoned application.

This new procedure should enable applicants to take appropriate and diligent action to reinstate an application inadvertently abandoned for failure to timely respond to an official communication. In most cases, a petition to revive under 37 CFR 1.137 will be the appropriate remedy. It may be that a response to the Office action was mailed to the Office with a certificate of mailing declaration as a part thereof (notice of October 26, 1976; 951 O.G. 1342) but was not received in the Office. In this instance, adequate relief may be available by means of a petition to withdraw the holding of abandonment.

In any instance, if action is not taken promptly after receiving the notice of abandonment, appropriate relief may not be granted.

If a lack of diligent action is predicated on the contention that neither the Office action nor the notice of abandonment was received, one may presume that there is a problem with the correspondence address of record. Accordingly, your attention is directed to recent notices of May 28, 1975, and September 9, 1976, dealing with changes of address (935 O.G. 1352 and 951 O.G. 454). In essence, it is imperative that a paper notifying the Office of a change of address be filed promptly in *each* application in which the correspondence address is to be changed.

If an application is abandoned or a patent lapsed for an excessive time a terminal disclaimer may be required. A terminal disclaimer may also be required where the holding of abandonment or lapse is withdrawn but a determination is made that action attempting to correct the problem should have been taken in a more diligent manner.

WILLIAM FELDMAN,
May 9, 1977. *Deputy Assistant Commissioner for Patents.*

[959 O.G. 24]

(52) NEW PROCEDURES FOR RECORDATION OF INTERVIEWS

This notice establishes within the Patent and Trademark Office additional general procedures for the recordation of interviews. Proposed procedures were published in the OFFICIAL GAZETTE of June 28, 1977 (959 O.G. 36) for comment from interested members of the public by August 10, 1977. Fifteen written comments were received the majority of which were favorable to the proposed procedures. Careful consideration has been given to the comments and the procedures are being adopted with a few changes.

Under present practice it is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability as set forth in Setion 713.04 of the Manual of Patent Examining Procedure (MPEP). This practice is continued and further amplified as set forth below.

Recent surveys have indicated that the substance of many interviews has not been made of record or the text thereof is incomplete as to substantive matters. In some cases, the substance of an interview may be presented as arguments in a subsequent response filed by the applicant but without any indication that they had been presented at the interview. In order to help insure a better record of examiner-applicant interviews in application files, the following new procedures are adopted to become effective for interviews conducted on and after January 1, 1978. Appropriate changes will be made in the Manual of Patent Examining Procedure (MPEP).

Examiners will complete a two-sheet carbon interleaf Interview Summary Form for each interview held where a matter of substance has been discussed by checking the appropriate boxes and filling in the blanks in neat handwritten form. Discussions regarding only procedural matters, directed solely to restriction requirements (for which interview recordation is otherwise provided for in Section 812.01 of the MPEP), or pointing out typographical errors or unreadable script in

Office actions or the like, are excluded from the interview recordation procedures below.

The Interview Summary Form shall be given an appropriate paper number, placed in the file and listed on the "Contents" list on the file wrapper. The docket and serial register cards will not be updated to reflect this interview. In a personal interview, the duplicate copy of the Form will be removed and given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephonic interview, the copy will be mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner before an allowance is not likely or if other circumstances dictate, the Form will be mailed promptly after the telephonic interview rather than with the next official communication. The original of the completed Form will be made of record and placed in the right hand flap of the file.

The Form provides for recordation of the following information:

— Serial Number of the application
— Name of applicant
— Name of examiner
— Date of interview
— Type of interview (personal or telephone)
— Name of participant(s) (applicant, attorney or agent, etc.)
— An indication whether or not an exhibit was shown or a demonstration conducted
— An identification of the claims discussed
— An identification of the specific prior art discussed
— An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). (Agreements as to allowability are tentative and do not restrict further action by the examiner to the contrary.)
— The signature of the examiner who conducted the interview
— Names of other Patent and Trademark Office personnel present.

The Form also contains a statement reminding the applicant of his responsibility to record the substance of the interview.

It is desirable that the examiner orally remind the applicant of his obligation to record the substance of the interview in each case unless both applicant and examiner agree that the examiner will record same. Where the examiner agrees to record the substance of the interview, or when it is adequately recorded on the Form or in an attachment to the Form, the examiner will check a box at the bottom of the Form informing the applicant that he need not supplement the Form by submitting a separate record of the substance of the interview.

It should be noted, however, that the Interview Summary Form will not be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview:

The complete and proper recordation of the substance of any interview should include at least the following applicable items:

1) A brief description of the nature of any exhibit shown or any demonstration conducted.
2) an identification of the claims discussed.
3) an identification of specific prior art discussed.
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the examiner.
5) a brief identification of the general thrust of the principal arguments presented to the examiner. The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he feels were or might be persuasive to the examiner.
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete or accurate, the examiner will take appropriate action as set forth in MPEP Section 713.04. If the record is complete and accurate, the examiner should place the indication "Interview record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

C. MARSHALL DANN,
Aug. 30, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 21]

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(53) STATEMENTS FILED UNDER ATOMIC ENERGY ACT AND NASA ACT

Attention is called to the provisions of section 152 of the Atomic Energy Act of 1954 (42 U.S.C. 2182) and section 305(c) of the National Aeronautics and Space Act of 1958 (42 U.S.C. 2457). These statutes provide that the title to inventions useful in the production or utilization of special nuclear material or atomic energy, made or conceived in the course of or under any contract, subcontract, or arrangement entered into with or for the benefit of the Atomic Energy Commission, and any invention made in the performance of any work under any contract of the National Aeronautics and Space Administration, shall be vested in the United States. They also provide that no patent may be granted for any invention useful in the production or utilization of special nuclear material or atomic energy, or which in the opinion of the Commissioner has significant utility in the conduct of aeronautical or space activities, unless the applicant files with his application or within 30 days after request therefor by the Commissioner, a statement under oath setting forth (a) the full facts in regard to the making or conception of the invention, and (b) the situation with regard to the contractual relationships involving the Commission or the Administration. Careful attention should be given the exact wording of the requirements of whichever of these sections is pertinent in order to assure that all of the requirements are met. Since the duty of requiring the statements is placed by law on the Commissioner of Patents, it is incumbent on the Commissioner to determine whether the statements are timely filed and sufficient in substance to comply. Since these laws do not provide for any extension of the 30-day period or for reviving an application which has become abandoned for failure to file a proper statement, it is important that such statements be timely filed and that they do so comply in order to avoid loss of valuable patent rights.

The "full facts" involved in the conception and making of an invention should include those which are unique to that invention. The use of form paragraphs or printed forms which set forth only broad generalized statements of fact is not ordinarily regarded as meeting the requirements of these statutes.

This office has construed the word "applicant" in both of these statutes to mean the inventor or joint inventors in person. Accordingly, in the ordinary situation, the statements must be signed by the inventor or joint inventors, if available. This construction is consistent with the fact that no other person could normally be more knowledgeable of the "full facts concerning the circumstances under which such invention was made," (42 U.S.C. 2457) or, "full facts surrounding the making or conception of the invention or discovery" (42 U.S.C. 2182).

In instances where an applicant does not have first-hand knowledge whether the invention involved work under any contract, subcontract, or arrangement with or for the benefit of the Atomic Energy Commission, or had any relationship to any work under any contract of the National Aeronautics and Space Administration, and includes in his statement information of this nature derived from others, his statement should identify the source of his information. Alternatively, the statement by the applicant could be accompanied by a supplemental declaration or oath, as to the contractual matters, by the assignee or other person, e.g., an employee thereof, who has the requisite knowledge.

Where an applicant is deceased or incompetent, or where it is shown to the satisfaction of this Office that he refuses

to furnish a statement or cannot be reached after diligent efforts, declarations or statements under oath setting forth the information required by the statutes may be accepted from an officer or employee of the assignee who has sufficient knowledge of the facts. The offer of such substitute statements should be based on the actual unavailability of or refusal by the applicant, rather than mere inconvenience. Where it is shown that one of joint inventors is deceased or unavailable, a statement by all of the other joint inventor(s) may be accepted.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Aug. 13, 1973.

[914 O.G. 2]

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(54) EXTENSIONS OF TIME TO SUBMIT AFFIDAVITS AFTER FINAL REJECTION

Not infrequently, applicants request an extension of time, stating as a reason therefor that more time is needed in which to submit an affidavit. When such a request is filed after final rejection, the granting of the request for extension of time is without prejudice to the right of the examiner to question why the affidavit is now necessary and why it was not earlier presented. If applicant's showing is insufficient, the examiner may deny entry of the affidavit, notwithstanding the previous grant of an extension of time to submit it. The grant of an extension of time in these circumstances serves merely to keep the case from becoming abandoned while allowing the applicant the opportunity to present the affidavit or to take other appropriate action. Moreover, prosecution of the application to save it from abandonment must include such timely, complete and proper action as required by 37 CFR 1.113. The admission of the affidavit for purposes other than allowance of the application, or the refusal to admit the affidavit, and any proceedings relative thereto, shall not operate to save the application from abondonment.

Implicit in the above practice is the fact that affidavits submitted after final rejection are subject to the same treatment as amendments submitted after final rejection. *In re Affidavit Filed After Final Rejection,* 152 USPQ 292, 1966 C.D. 53.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

July 25, 1977.

[961 O.G. 16]

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(55) EXTENSION OF TIME LIMIT

This notice is intended to clarify certain misunderstandings and indicates the treatment given to requests for an extension of time in a situation where applicant has been given a time limit to complete an otherwise incomplete but bona fide attempt to respond to the previous Office action and advance the case to final action.

According to 37 CFR 1.135(c) when the applicant has filed a response to an examiner's action but consideration of some matter or compliance with some requirement has been inadvertently omitted, an opportunity to explain and supply the omission may be given before the question of abandonment is considered. According to the M.P.E.P., Section 710.02(c), the examiner may give applicant one month or the remainder of the period for response, whichever is longer, to complete the response. Neither the regulation nor the M.P.E.P. indicate that this time can be extended.

Under the regulation, the missing matter or lack of compliance must be considered by the examiner as being "inadvertently omitted." Once an inadvertent omission is brought to the attention of the applicant, the question of inadvertence no longer exists. Therefore, any further time to complete the response would not be appropriate under 37 CFR 1.135(c). Accordingly, no extension of time will henceforth be granted in these situations.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Nov. 28, 1977.

[965 O.G. 14]

(56) EXAMINATION OF PATENT APPLICATIONS HAVING AN ISSUE OF FRAUD

This notice deals with the general procedures established within the Patent Office for the handling, during ex parte examination, of applications in which, or in relation to which, some facts appear or representations are made raising an issue of fraud.

Such applications should be forwarded by the examiner to the Office of the Assistant Commissioner for Patents as soon as the facts or representations are discovered. The application will then be reviewed and a determination made as to whether immediate action on the issue of fraud is necessary or whether the consideration of such an issue should be delayed until after the normal ex parte examination by the examiner (if such examination has not previously taken place).

Where compelling reasons dictate immediate action, the application will not be returned to the examining group for normal ex parte examination until such action is complete. Otherwise, the application will be returned to the examining group. The examiner will complete the examination as to all matters except that any issues relating to possible fraud will not be considered or commented upon. When this examination is completed the application will be returned to the Office of the Assistant Commissioner for Patents. An investigation will then be undertaken to resolve the issues relating to the possible fraud. Such an investigation may include a requirement for additional information from applicant, or from the examiner, should it be necessary for the proper conduct of the investigation.

If the investigation reveals a prima facie case of fraud an Order to Show Cause why the application should not be stricken under Rule 56 of the Rules of Practice [37 CFR 1.56] will be issued.

If a prima facie case of fraud does not exist, or is adequately rebutted, a decision will be entered in the application file stating that the Patent Office has found no evidence necessitating striking the application. The application will then be returned to the examining group or other appropriate Patent Office section for further action.

WILLIAM FELDMAN,
Acting Assistant Commissioner for Patents.

Jan. 2, 1975.

[930 O.G. 1455]

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(57) TITLE 37—PATENTS, TRADEMARKS AND COPYRIGHTS

CHAPTER 1—PATENT AND TRADEMARK OFFICE, DEPARTMENT OF COMMERCE

PART 1—RULES OF PRACTICE IN PATENT CASES

Patent Examining and Appeal Procedures

On October 4, 1976 notice was given in the Federal Register (41 FR 43729) of a proposal to amend sixteen sections of Title 37 of the Code of Federal Regulations relating to patent examining and appeal procedures. Interested persons were invited to comment on the proposal by December 7, 1976. One hundred seventy-five written letters and statements were submitted. A hearing was held in Arlington, Virginia on December 7, 1976 at which 21 persons testified orally. Careful consideration has been given to all comments received, and the proposal is being adopted with certain changes.

The regulations adopted involve all sections that were proposed to be revised, amended or added—namely, §§ 1.11, 1.14, 1.52, 1.56, 1.65, 1.69, 1.97, 1.98, 1.99, 1.109, 1.175, 1.194, 1.196, 1.291, 1.292, and 1.346. Amendments also are being made in two sections which were not included in the published proposal—§§ 1.51 and 1.176. Since amendments to these sections are closely related to the substance of matters which were contained in the published proposal, separate notice and public comment on these amendments are deemed unnecessary.

In addition, amendments are being adopted which were published for comment in two earlier, much less extensive proposals that concerned availability of certain files for public inspection. A notice of a proposed amendment to § 1.14(b) was published on June 4, 1974 (39 FR 19786). A notice of a proposed amendment to § 1.11(a) was published on September 17, 1974 (39 FR 33376). No negative comments were submitted with respect to either of these proposals and both are being adopted without change.

The text of the rules will be reproduced in the Patent and Trademark Office OFFICIAL GAZETTE in about a month with additions indicated by arrows and deletions indicated by brackets to help readers identify the changes. A transcript of the hearing, the letters and written statements received, and a summary and analysis of the comments are available for public inspection in Room 11E10 of Crystal Plaza Building 3, 2021 Jefferson Davis Highway, Arlington, Virginia.

PURPOSE OF RULES

The purpose of the rules that are being adopted is to improve the quality and reliability of issued patents by strengthening patent examining and appeal procedures. It is desirable that patents be as dependable as possible, so as to enhance the incentives provided by the patent system to make inventions, to invest in research and development, to put new or improved products on the market, and to disclose inventions that otherwise would be kept as trade secrets. It is believed that the rules being adopted will help to maintain strong patent incentives.

The rules afford patent owners an opportunity, through the filing of a reissue application, to obtain a ruling from an examiner on the pertinence of additional prior art after a patent has been issued. The rules also broaden the public's opportunity for participation in the patent examining process, consistent with the limitations of statute, the protection of trade secrets, and the need to avoid making it unduly expensive to obtain a patent.

The rules set forth the duty of candor and good faith which applicants have to the Patent and Trademark Office and encourage them to provide information about the prior art in a way that will make it more useful to examiners. A provision for foreign language oaths by individuals who do not understand English is intended to make them more aware of their representations and of their obligations.

Under the rules more Patent and Trademark Office decisions that could have important precedent value will be available to the public, and some additional files will be available for inspection. Proceedings before the Board of Appeals are modified to help avoid the issuance of invalid patents. The rules encourage examiners to see that persons inspecting the file history of issued patents will be able to tell why the case was allowed.

REISSUE APPLICATIONS

Amended § 1.175 permits a patent owner to have new prior art considered by the Office by way of a reissue application without making any changes in the claims or specification. It is adopted with no change from the proposal. The requirement for an oath or declaration alleging that the reissue applicant believes "the original patent to be wholly or partly inoperative or invalid. . . ." is dispensed with in § 1.175(a)(1) unless the applicant believes that to be the case. Section 1.175(a)(4) recognizes that reissues may be filed to have the patentability of the original patent considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

Thus, a patentee may file a reissue if he believes his patent is valid over prior art not previously considered by the Office but would like to have a reexamination. The procedure may be used at any time during the life of a patent. During litigation, a federal court may, if it chooses, stay proceedings to permit new art to be considered by the Office.

If a reissue application is filed as a result of new prior art with no changes in the claims or specification and the examiner finds the claims patentable over the new art, the application will be rejected as lacking statutory basis for a reissue, since 35 USC 251 does not authorize reissue of a patent unless it is deemed wholly or partly inoperative or invalid. However, the record of prosecution of the reissue will indicate that the prior art has been considered by the examiner.

A substantial majority of the comments received favored amended § 1.175 as a means for improving the reliability of patents and avoiding unnecessary litigation costs. The negative comments generally questioned the statutory authority of the Commissioner to adopt this section. Authority for § 1.175 is believed to exist in 35 U.S.C. 6, which is the Commissioner's rulemaking authority, and in 35 U.S.C. 251. The latter section of the statute requires that the patent be deemed wholly or partly inoperative or invalid before a reissue may be granted, but does not require such a belief by the patentee before a reissue application may be filed. The case law does not suggest that the approach of new § 1.175(a)(4) is inconsistent with 35 U.S.C. 251.[1] Inasmuch as 35 U.S.C. 251 is a remedial provision,[2] it is believed that a liberal interpretation is justified and that adequate authority exists for the amended section.

Amended § 1.11(b) opens all reissue applications to inspection by the general public. Section 1.11(b) also provides for announcement of the filings of reissue applications in the OFFICIAL GAZETTE. This announcement will give interested members of the public an opportunity to submit to the examiner information pertinent to patentability of the reissue application. The announcement will include at least the filing date, reissue application and original patent numbers, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and examining group to which the reissue application is assigned. Section 1.11(b) is amended from the proposal to so indicate. Reissue applications already on file on the effective date of the section will not be automatically open to inspection and will not be announced in the OFFICIAL GAZETTE. However, a liberal policy will be followed in granting petitions for access to individual applications already on file.

In order that members of the public may have time to review the reissue application and submit pertinent information to the Office before the examiner's action, § 1.176 is amended to provide that reissue applications will not be acted on sooner than two months after the OFFICIAL GAZETTE announcement of filing.

A substantial majority of the comments received favored adoption of § 1.11(b). The only opposition was based upon a suggestion that no statutory authority exists. However, since reissue applications contain no new disclosure, and therefore no trade secrets or confidential information, they are considered to present a "special circumstance" within the meaning of 35 U.S.C. 122.

The insertion of "all" as the fifth word of the first sentence of § 1.11(b) is for clarity. The word "furnished" is changed to "obtained" in § 1.11 for clarity.

PROTESTS AND PUBLIC USE PROCEEDINGS

Amended §§ 1.291 and 1.292 give greater recognition to the value of written protests and public use petitions in avoiding the issuance of invalid patents.

A substantial majority of the comments favored these sections and viewed them as improving the quality of issued patents. Entry of protests has been upheld in court.[3]

Section 1.291(a) provides that public protests against pending applications will be entered in the application file and will, if they meet stated requirements, be considered by the examiner. To guarantee consideration by the examiner, protests must be accompanied by copies of prior art documents relied upon, although protests without copies will not necessarily be ignored. This is similar to the requirement of new § 1.98 that copies of patents and publications accompany prior art statements. Section 1.291 does not contemplate permitting a protester to participate as a party in further proceedings. In the case of applications available to the public, such as reissue applications, the protester may file papers rebutting statements made by the applicant. The examiner at his discretion may request a protester to sumit additional written information or may provide extra time for comments by a protester to be filed.

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[1] See *In re Clark*, 522 F.2d 623, 187 USPQ 209 (CCPA 1975), at footnote 4 where the court declined to decide whether it is proper to seek reissue merely to disclose uncited prior art. See also *In re Altenpohl*, 500 F.2d 1151, 183 USPQ 38 (CCPA 1974).

[2] See *In re Oda*, 443 F. 2d 1200, 170 USPQ 268 (CCPA 1971).

[3] *International Paper Co. v. Fibreboard Corp.*, 63 F.R.D. 88, 181 USPQ 740 (D. Del. 1974).

To ensure consideration by the examiner, all protests must be timely submitted. Protests will generally be considered timely submitted, if they are filed before final rejection or allowance of the application by the examiner. The consideration given to protests filed after final rejection or allowance of the application by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Obviously, if the prior art documents anticipate or clearly render obvious one or more claims they will not knowingly be ignored. It must be recognized, however, that the likelihood of consideration by the examiner decreases as the patent date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

The first sentence of § 1.291(a) is deleted as unnecessary. Section 1.291(a) also is changed from the proposal to make clear that it applies to pending applications and that all protests will be referred to the examiner having charge of the subject matter involved.

Section 1.291(b) incorporates the existing Office policy of permitting persons to submit prior art citations or copies of prior art after a patent has been granted. The section is changed from the proposal by the addition of the words "any papers related thereto" to recognize that statements as to the pertinence of prior art may be submitted. Both the citations and the related papers are to be entered without comments. The material submitted is not examined by the Office but is available to members of the public inspecting Office records.

Some suggestions were received for major modifications of § 1.291. It was suggested that an advisory opinion of the examiner be placed in the patent file when protests were received after issuance of the patent. Several persons supported a suggestion for examiners to state whether a "new issue" was raised by prior art cited by a protester. Another suggestion was that a procedure similar to that used in the recent Trial Voluntary Protest Programs [4] be adopted on a continuing basis. These suggestions were carefully considered, but are not adopted. The suggestions extend substantially beyond § 1.291 as proposed, and their benefits do not appear sufficient to justify the added cost at this time.

Materials submitted to the Office under §§ 1.291 and 1.292 are to be served upon the applicant, patentee, attorney or agent when possible. The term "patentee" is used in its ordinary sense as defined in 35 USC 100(d). If service is not possible, materials are to be submitted in duplicate so that the Office can attempt to send the duplicate copy. The proposal is changed by adding the words "with the Office" after "filed" in §§ 1.291(c) and 1.292(b) for clarity.

In § 1.292, the requirement that petitioner bear the Office's expenses in conducting the public use proceeding is deleted. Section 1.292 is also amended to ensure that the existence of public use proceedings is recorded in the application file wrapper. Notice of a petition for a public use proceeding will be entered in the file in lieu of the petition itself when the petition and the accompanying papers are too bulky to accompany the file. Any public use papers not physically entered in the file will be publicly available whenever the application file wrapper is available.

DUTY OF DISCLOSURE

Amended § 1.56 defines the duty to disclose information to the Office and the criteria for striking an application when that duty is violated. The wording of the section is changed in several respects from the proposal, but the purpose and general scope are the same as in the proposal. The section codifies the existing Office policy on fraud and inequitable conduct, which is believed consistent with the prevailing case law in the federal courts. The expanded wording of the section is intended to be helpful to individuals who are not expert in the judicially developed doctrines concerning fraud. The section should have a stabilizing effect on future decisions in the Office and may afford guidance to courts as well.

A majority of comments received favored § 1.56 as proposed or with modifications. Persons opposed expressed concern over the imprecise definition of the duty of disclosure and the possibility that the proposal would substantially increase the burden on patent applicants. Some stated that there would be increased litigation as a result of the proposal. Several suggestions were received on better ways to define the individuals who should disclose information and the kinds of information that should be disclosed.

The first sentence of § 1.56(a) is changed from the proposal by adding the word "substantively," so that individuals having a duty of disclosure are limited to those who are "substantively involved in the preparation or prosecution of the application." This change is intended to make clear that the duty does not extend to typists, clerks, and similar personnel who assist with an application. This phrase, when taken with the last sentence of § 1.56(a), is believed to provide an adequate indication of the individuals who are covered by the duty of disclosure. The word "with" is inserted in the first sentence of § 1.56(a) before "the assignee" and before "anyone to whom there is an obligation to assign" to make clearer that the duty applies only to individuals, not to organizations.

Numerous comments concerned the term "relevance" that was used in the proposal. In response to the comments, language is substituted in § 1.56 and related sections which is believed to establish a clearer standard for determining whether information need be disclosed to the Office. "Relevant" is replaced by "material" because the latter term connotes something more than a trivial relationship. It appears to be more commonly used in court opinions. In addition, the third sentence of § 1.56, which defines materiality, is rewritten. The sentence now states that information is material "where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent." The sentence paraphrases the definition of materiality used by the Supreme Court in its recent decision in *TSC Industries* v. *Northway*.[5] Although in that case the court was concerned with rules promulgated by the Securities and Exchange Commission, the Court's articulation of materiality is believed consistent with the prevailing concept that has been applied by lower courts in recent patent cases.

The definition of materiality in § 1.56 will have to be interpreted in the context of patent law rather than securities law. Principles followed by courts in securities cases should not be translated to patent cases automatically. It is noteworthy, however, that in formulating the definition of materiality in *TSC Industries* the Supreme Court considered some of the same matters over which concern was expressed in the public comments on proposed § 1.56. The Court noted that the standard of materiality should not be so low that persons would be "subjected to liability for insignificant omissions or misstatements," or so low that the fear of liability would cause management "simply to bury the shareholder in an avalanche of trivial information—a result that is hardly conducive to informed decision making." [6]

Although the third sentence of § 1.56(a) refers to decisions of an examiner, it is intended that the duty of disclosure would apply in the same manner in the less common instances where the official making a decision on a patent application is someone other than an examiner—e.g., a member of the Board of Patent Interferences or the Board of Appeals. This is implicit in the duty "of candor and good faith" toward the Office that is specified in the first sentence of § 1.56(a).

Comments and questions were received concerning the term "information" used in the second and third sentences of § 1.56(a) and elsewhere. It means all of the kinds of information required to be disclosed under current case law. In addition to prior art patents and publications, it includes information on prior public uses, sales, and the like. It is not believed practicable to define information in the text of the rule at this time. However, the rule is not intended to require disclosure of information favorable to patentability—e.g., evidence of commercial success of the invention. Neither is it meant to require disclosure of information concerning the level of skill in the art for purposes of determining obviousness.

Several comments were received concerning the duty to disclose information the patent applicant regards as confidential, including information the applicant has received from another party under an injunction of secrecy. This problem has existed prior to amendment of § 1.56. The Patent

[4] 923 O.G. 2; 930 O.G. 1454; 938 O.G. 945.

[5] 426 U.S. ——, 48 L. Ed. 2d 757, 96 S. Ct. 2126, 44 U.S.L.W. 4852, decided June 14, 1976.

[6] 426 U.S. at ——, 48 L. Ed. 2d at 765, 96 S. Ct. at 2132, 44 U.S.L.W. at 4855.

and Trademark Office, of course, keeps information disclosed by applicants confidential until a patent is issued. It has been suggested that the Office should develop a mechanism for continuing to hold information in confidence after issuance of a patent if in the judgment of the examiner the information is not material to the examination of the application. The feasibility of offering a rule for public comment on this topic at a later date will be considered.

New § 1.56(b) is added to make clear that information may be disclosed to the Office through an attorney or agent of record or through a pro se inventor, and that other individuals may satisfy their duty of disclosure to the Office by disclosing information to such an attorney, agent or inventor. Information that is not material need not be passed along to the Office.

Proposed sections 1.56 (b) and (c) have been revised and shortened and appear at §§ 1.56 (c) and (d). The proposal was criticized for leaving it open to the Office to apply a different standard of materiality from the one set forth in § 1.56.[7] Section 1.56(d) as adopted states that an application "shall" be stricken when the criteria set forth are met. Thus § 1.56(d) as adopted establishes a single standard for striking applications.

The term "inequitable conduct" is dropped from § 1.56(d) as covering too great a spectrum of conduct to be subject to mandatory striking. Inequitable conduct that is equivalent to fraud is intended to come within the definition of fraud. The Court of Customs and Patent Appeals already has interpreted "fraud" in existing § 1.56 to encompass conduct of this sort.[8] Moreover, § 1.56(d) as adopted calls for striking an application either for fraud or for a violation of the duty of disclosure.

In § 1.56(d) "bad faith" is substituted for the term "deliberate" that was used in the proposal. This change is to make clear than an intent to deceive (or gross negligence equivalent to such an intent) must be shown before an application will be stricken. Bad faith is not present if information is withheld as a result of an error in judgment or inadvertence.

Several comments concerned whether attorneys and agents could represent their clients' interests and at the same time comply with § 1.56. Similar comments were directed to §§ 1.97 to 1.99. It is of course in the interest of the client to have a valid patent and this cannot be obtained without disclosure of known material facts. It is not inconsistent for an attorney or agent to fulfill his duty of candor and good faith to the Office and to act as an advocate for his client. The submission of information under § 1.56 does not preclude the submission of arguments that such information does not render the subject matter of the application unpatentable.

In § 1.65 a new third sentence is added to require the patent applicant to acknowledge the duty of disclosure. The language is changed from the proposal to be consistent with changes made in § 1.56. To allow time for the Office and applicants to revise printed oath and declaration forms now in use, the mandatory acknowledgement of the duty of disclosure in amended § 1.65 does not become effective until January 1, 1978. Applicants at their option may include the new language in oaths and declarations filed prior to the effective date. The Office will publish a separate notice in the Federal Register adding a sentence acknowledging the duty of disclosure to appropriate forms in 37 CFR Part 3, "Forms for Patent Cases."

The word "statement" is deleted from the title of § 1.65 to avoid confusion with the prior art statement of §§ 1.97 through 1.99.

Amended § 1.346 emphasizes that there must be a reasonable basis to support every allegation of improper conduct made by a registered practitioner in any Office proceeding. The language that was proposed is clarified in the section as adopted. Although § 1.346 is limited to papers filed in Office proceedings, the amendment to § 1.346 is not intended to imply that disciplinary action never will be taken against a registered practitioner under § 1.348 for a groundless allegation of improper conduct in a court proceeding.

[7] See discussion accompanying proposed rules in Federal Register of October 4, 1976, page 43731, first sentence.

[8] *Norton* v. *Curtiss*, 433 F. 2d 779, 792, 167 USPQ 532, 543 (CCPA 1970).

PRIOR ART STATEMENT

New §§ 1.97, 1.98 and 1.99 deal with prior art statements and provide a mechanism by which patent applicants may comply with the duty of disclosure provided in § 1.56. The sections have been substantially changed from the proposal, in response to comments received.

Unlike the corresponding part of the proposal, the sections as adopted are not mandatory, though applicants are strongly encouraged to follow the procedures described in them. Applications will be examined whether or not a prior art statement is filed and whether it complies with the rules or is defective. It is nevertheless believed that applicants will find that the use of prior art statements complying fully with the requirements of §§ 1.97 through 1.99 will be the best way to satisfy the duty of disclosure. The Patent and Trademark Office cannot assure that prior art disclosed in other ways will be considered by the examiner.

Sections 1.97 through 1.99 do not prescribe the content of what materials should be submitted in the prior art statement; this is for the applicant and the attorney or agent to decide in the light of the duty of disclosure expressed in § 1.56. The only criterion contained in §§ 1.97 through 1.99 as to content of the art cited is in § 1.97(b). This subsection indicates that the statement will be construed as a representation that the prior art listed includes what the submitter considers to be the closest art of which he is aware. The submitter need not decide which particular items of prior art are the closest or identify any items as such; the representation is simply that he is not withholding known prior art which he considers closer than that which is submitted. Section 1.97(b) makes clear that the prior art statement is not a representation that a search has been made or that no better art exists.

In § 1.97(a) the time for filing the prior art statement is extended from the two months of the original proposal to three months. In most cases prior art submitted within three months will be available to the examiner before he takes up the case for action, though it will be helpful if citations are made as promptly as possible.

Section 1.98 lists the elements of the prior art statement: a listing of the art, a concise explanation of the relevance of each listed item, and copies of the art or the pertinent portions thereof.

The prior art statement resembles somewhat the "patentability statement" of the proposal and the "patentability brief" proposed elsewhere.[9] The name has been changed to reflect a change in the requirements of § 1.98(a). Unlike the proposed version of this paragraph, which called for an explanation of why the claimed invention is believed patentable over the cited art, the paragraph as adopted calls only for a concise explanation of the relevance of each listed item. This may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention. It might be a simple statement pointing to similarities between the item of prior art and the claimed invention. It is permissible but not necessary to discuss differences between the prior art and the claims. It is thought that the explanation of relevance will be essentially as useful to the examiner as the formerly proposed explanation of patentability, and should be significantly less burdensome for the applicant to prepare.

Section 1.98 requires a copy of each patent or publication cited, including U.S. patents, to accompany the prior art statement. Several comments questioned the need for burdening the applicant to supply copies of materials that are present in the Office's files. However, substantial time and effort often is needed to locate a document in the Office's files. Since the person submitting the prior art statement generally has available a copy of the item being cited, it is believed that expense and effort can be minimized by having that person supply the copy in all cases. Consideration has been given to proposals to allow the applicant to submit an order for copies of the patents along with his statement instead of actually submitting copies. This will be further studied, but to date no way has been found to assure that the copies will be available to the examiner by the first action unless the applicant submits them with the prior art statement.

Other changes to §§ 1.97 through 1.99 from the proposal eliminate unnecessary language and clarify the requirements.

[9] E.g., Federal Register of September 9, 1968, 34 FR 14178, 866 O.G. 1402; S. 2255, 94th Congress, § 131(b).

A notice published in 1974[10] contained guidelines for the citation of prior art by applicants. Many of those guidelines are repeated or superseded by §§ 1.97 through 1.99. In order to allow applicants, attorneys and agents time to adjust their procedures to comply with the requirements for prior art statements, the effective date of §§ 1.97 through 1.99 will be July 1, 1977. Until these new sections become effective, applicants should continue to follow the 1974 guidelines. Issuance of a revised notice, to take effect July 1, 1977, is under study.

A survey conducted by the Office in 1976 concludes that many applicants have not been citing prior art to the Office.[11] It is hoped that with the duty of disclosure expressly set forth in § 1.56, applicants will perceive that it is to their advantage to use the procedures of §§ 1.97 through 1.99.

Section 1.51 is amended by designating the existing rule as § 1.51(a) and adding new § 1.51(b) which contains a reference to §§ 1.97 through 1.99.

Foreign Language Oaths

Amended § 1.52 and new § 1.69 are adopted as proposed.

Section 1.69 requires that oaths and declarations be in a language which is understood by the individual making the oath or declaration, i.e., a language which the individual comprehends. If the individual comprehends the English language, he must use it. If the individual cannot comprehend the English language, any oath or declaration must be in a language which the individual can comprehend. If an individual uses a language other than English for an oath or declaration, the oath or declaration must include a statement that the individual understands the content of any documents to which the oath or declaration relates. If the documents are in a language the individual cannot comprehend, the documents may be explained to him so that he is able to understand them.

The Office will provide approved translations for as many of the oath or declaration forms which appear in Part 3 of Title 37 of the Code of Federal Regulations as practicable, and in as many languages as practicable, probably using a side-by-side English/foreign language format. The availability of the foreign language forms will be announced in the Official Gazette at a later date.

The change in § 1.52, providing for an exception to the requirement that oaths and declarations be in the English language, is necessitated by the adoption of § 1.69.

Although very few persons opposed §§ 1.52 and 1.69, several suggested that the philosophy behind the change be extended to the specification, requiring the specification to be in a language which the applicant understands, accompanied by an English translation. This suggestion was not considered feasible because of the obvious burdens on the applicant and the danger to the applicant and the public if the translation is not literally correct. Also, if a large number of applications were filed in a foreign language, there would be significant administrative burdens on the Office. Attention is directed to the Manual of Patent Examining Procedure, § 608.1, which permits non-English language applications to be filed in certain limited circumstances.

Other suggested modifications of the proposed rule included: (1) using an English language oath or declaration with one additional clause in a language understood by the person making the oath or declaration, the clause stating that the person understands all the documents to which the oath or declaration relates; and (2) extending the two month grace period for filing an English translation of an oath or declaration filed under § 1.65.

After due consideration, suggestion (1) was believed not to accomplish the objectives of the rule as well as the adopted rule. Suggestion (2) would cause unsatisfactory delays in the initial processing of applications.

Decisions and Files Made Public

Section 1.14(d) makes more explicit the conditions under which significant decisions of the Patent and Trademark Office will be made available to the public, and includes reference to decisions of the Board of Patent Interferences, in addition to decisions of the Board of Appeals and the Commissioner.

A large majority of the comments received were favorable. Several commentators felt that more decisions would be made available as a result of the proposed section and that it would assist in publicizing aspects of Office procedure which may not have been available previously.

Some negative comments were based on the view that the Freedom of Information Act[12] required all decisions of the Office to be made publicly available. A greater number of those opposing the proposed section, however, felt that applicants should have an absolute right to have their applications maintained in confidence and that no information should be made public without specific authorization from them. One commentator felt that rulemaking on this subject should be deferred until currently pending litigation[13] under the Freedom of Information Act was finally resolved.

The section as adopted is applicable to decisions deemed by the Commissioner to involve an interpretation of patent laws or regulations that would be of significant precedent value, where such decisions are contained in either pending or abandoned applications or in interference files not otherwise open to the public. It is applicable whether or not the decision is a final decision of the Patent and Trademark Office.

The parenthetical phrase in the first sentence of the proposed section, which cited other provisions of the rules under which decisions are open to public inspection, is deleted as unnecessary and possibly confusing. Also, in view of several comments received, the period of time during which an applicant or party in interest may object to having a decision made public is extended from one month to two months. At least twenty days is given to request reconsideration and seek court review before a decision is made public over an objection.

Section 1.14(d) is considered to place a duty on the Patent and Trademark Office to identify significant decisions and to take the steps necessary to inform the public of such decisions, by publication of such decisions, in whole or in part. It is anticipated, however, that no more than a few dozen decisions per year will be deemed of sufficient importance to warrant publication under the authority of this section.

Amended § 1.14(b) allows public inspection of abandoned applications referred to in defensive publications. The comments received on the proposed amendment on this topic in 1974 expressed no opposition and the proposal is adopted without change.

The amendment is intended to encourage use of the defensive publication program provided under § 1.139. The objective of that program is to make available to the public the technical disclosure of applications in which the owner prefers to publish an abstract in lieu of obtaining an examination. Existing §§ 1.11(b) and 1.139 open the complete defensive publication application to inspection by the general public upon publication of the abstract. With the amendment, an abandoned application referred to in a defensive publication application will likewise be open to public inspection, avoiding any need to repeat its contents in the defensive publication application. Thus, public availability of the applications involved should be of benefit both to the applicant and the public.

A suggestion was made that the section be extended still further to include abandoned applications referred to in foreign patents. This suggestion, however, goes too far beyond the proposal that was published and has too uncertain an impact to be adopted at this time.

Amended § 1.11(a) provides earlier access to the file of an interference which involved a patent or an application on which a patent has issued. All comments that were submitted on the 1974 proposal on this topic were favorable and two commentators felt the proposal should be extended further. The proposal is being adopted without change.

Under present practice, access to the file of an interference is not permitted until judicial review of the decision of the Board of Patent Interferences has been exhausted. The amended section allows access to the file after final decision of the Board of Patent Interferences if that decision is an award of priority as to all parties. It is believed that such earlier access will be of benefit to members of the public by

[10] Notice of August 12, 1974, 926 O.G. 2.
[11] BNA's Patent, Trademark and Copyright Journal, No. 301, October 28, 1976, page D–1.
[12] 5 USC 552.
[13] *Irons* v. *Gottschalk*, Slip Opinion, No. 74–1365 (D.C. Cir., October 21, 1976).

making available information relevant to the issuance of the patent whether or not the interference decision is still being adjudicated.

PATENT APPEALS

Section 1.194 clarifies the circumstances in which oral hearings should be requested, provides for oral arguments by or on behalf of examiners in certain appeals and reduces the time permitted for oral arguments.

Comments relating to this section were favorable by a very substantial majority, although there were several reservations to the effect that § 1.194(a) tended to discourage or downgrade oral arguments. Participation by examiners was considered to be desirable not only from the standpoint of improving the overall presentation of the argument, particularly in complex cases, but also for the educational and experience benefits to the examiners themselves.

The only opposition to the section was based on the feeling that oral hearings would be discouraged. The rule is intended to discourage oral hearings only to the same extent as the Office's 1975 Official Gazette notice on the subject.[14] Section 1.194(a) indicates that oral hearings should not be requested as a matter of course in every appeal, but only in those circumstances where the appellant feels that such a hearing will be of material assistance to the proper presentation of the appeal. The section expressly provides that equal consideration will be accorded in deciding all appeals, whether or not an oral hearng is held.

In appeals where the appellant has requested an oral hearing, § 1.194(b) provides for oral argument by, or on behalf of, the primary examiner, if such argument is considered to be helpful by either the primary examiner or the Board. This provision incorporates the present practice of permitting examiners to present an oral argument before the Board.[15] It gives the Board additional discretionary authority to request presentation of an oral argument by, or on behalf of the examiner to ensure that all issues are fully and accurately presented.

Section 1.194(c) provides, as does existing § 1.194, that appeals will be assigned for consideration and decision without an oral hearing where none has been requested by the appellant. Where an oral hearing has been requested, a day of hearing will be set, and both appellant and the primary examiner will be notified. A provision for notice to the examiner is added to the proposed version. Additionally, § 1.194(c) reflects the present practice of limiting oral argument on behalf of the appellant to twenty minutes.[16] The time permitted for argument by the examiner has been shortened from twenty minutes, as proposed, to fifteen minutes. The examiner, unlike the appellant, will not ordinarily need time to present the facts of the case or for rebuttal.

In any appeal where oral argument is to be presented by, or on behalf of, the primary examiner, the appellant will be given due notice of that fact.

Proposed § 1.196(b) would have authorized the Board of Appeals to reject allowed claims, in cases before it, whenever the Board had knowledge of grounds for so doing.

While a majority of those commenting on this section favored in principle the concept of allowing the Board to have this right, significant concern was voiced that there was no statutory authority for the Board to actually reject allowed claims. Further, the question of proper authority for judicial review of such action by the Board was a matter of concern. Other reasons advanced in opposition to the section were that applicants would be inhibited from appealing by the risk of having allowed claims rejected and that the proposal would create a higher presumption of validity in cases reviewed by the Board. A significant number commented that it would be more appropriate for the Board to remand the case to the primary examiner for consideration of the grounds raised by the Board. This would afford the applicant an opportunity to demonstrate the patentability of the claims and would remove any question as to statutory authority.

In view of the comments received, existing § 1.196(b) will not be modified, but a new § 1.196(d) is added providing express authority for the Board of Appeals to include, in its decision, a statement of any grounds for rejecting any allowed claim that it believes should be considered by the primary examiner. Section 1.196(d) provides that the Board may remand the case to the examiner for such consideration, and that the applicant shall have an opportunity to respond to the grounds set forth by the Board prior to consideration, by the examiner. If the previously allowed claims are rejected by the examiner, the rejection may be appealed to the Board.

The new section further provides that a decision of the Board which includes a remand will not be considered as a final decision in the case, but that the Board, following conclusion of the proceedings before the primary examiner, will either adopt its earlier decision as final or will render a new decision based on all appealed claims, as it considers appropriate. In either case, final action by the Board will give rise to the existing alternatives available to an appellant following a decision by the Board.

In situations where the primary examiner concludes after consideration of all the evidence and argument that the remanded claims should be allowed, the new rule dealing with reasons for allowance (§ 1.109) provides an appropriate mechanism for him to explain, on the record, his reasoning for coming to this conclusion, notwithstanding the grounds set forth by the Board in its statement.

Promulgation of new § 1.196(d) does not affect the Board's existing authority to remand a case to the primary examiner without rendering a decision in approprite circumstances. Section 1.196(d) is not intended as an instruction to the Board to reexamine every allowed claim in every appealed application. It is, rather, intended to give the Board express authority to act when it becomes apparent, during the consideration of rejected claims, that one or more allowed claims may be subject to rejection on either the same or on different grounds from those applied against the rejected claims.

REASONS FOR ALLOWANCE

New § 1.109 is intended to emphasize and formalize the examiner's authority to state his reasoning for allowing a claim or claims. The authority is discretionary with the examiner and is only to be used when the record does not otherwise reveal the reasons for allowance.

A majority of the comments received favored the rule as proposed because it would tend to provide courts and others who were reviewing the patent with a clearer record. Those who opposed the rule most often gave the reason that the examiner might fail to state all the reasons or the strongest reasons why a claim was allowed, which could place unnecessary limitations on the claims or create an estoppel in subsequent litigation or licensing.

To help insure that the examiner's statement of his reasoning in allowing a claim will not unnecessarily limit the claims or create an estoppel, a final sentence is added to the proposal which states that failure of the applicant to comment upon or rebut the examiner's reasoning "shall not give rise to any implication that the applicant agrees with or acquiesces in the reasoning of the examiner."

Several commenters suggested that stricter enforcement of §§ 1.111 and 1.133 would eliminate the need for a new rule concerning reasons for allowance. Situations exist, however, where a statement of reasons for allowance could be helpful, for example when an examiner withdraws a rejection for reasons not suggested by the applicant; when an applicant submits several arguments for allowing a claim and the examiner finds not all of them persuasive; when an examiner allows a claim on the first Office action after citing very close prior art; and when the examiner allows a claim after remand from the Board of Appeals (see new § 1.196(d)).

The first sentence of the proposed rule is changed to define more precisely the circumstances in which an examiner's statement is appropriate, as well as to define more precisely the content of the statement. The statement will include the examiner's "reasoning." The examiner may state his reasoning whenever he "believes that the record of the prosecution as a whole does not make clear his reasons for allowing a claim or claims."

Several persons commented that the rule should provide a procedure for appeal from the examiner's statement of his reasoning. The rule does permit applicants to comment upon the examiner's reasoning. If the applicant does not wish to comment, he may reserve for a later proceeding, without prejudice, any rebuttal.

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[14] See notice of March 20, 1975, 933 O.G. 1010.
[15] MPEP, § 1209.
[16] See notice of March 20, 1975, 933 O.G. 1010.

[Text of adopted rules appears in 37 CFR, revised 7-1-77]

Effective Date. These amendments become effective on March 1, 1977, except for §§ 1.51, 1.97, 1.98, and 1.99 which become effective on July 1, 1977, and §§ 1.65 and 1.69 which become effective on January 1, 1978.

Date: Jan. 18, 1977.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved:

BETSY ANCKER-JOHNSON, PH.D.
Assistant Secretary for Science and Technology.

Date: Jan. 19, 1977.

[955 O.G. 1054]

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(58) GUIDELINES FOR IMPLEMENTATION OF RECENTLY REVISED RULES

Recently a number of rules relating to Patent Examining and Appeal Procedures were revised. The new rules were published in the Federal Register at 42 F.R. 5588 on January 28, 1977, and in the OFFICIAL GAZETTE at 955 O.G. 1054 on February 22, 1977. The following guidelines are being published to describe the procedures which are being followed in implementing 37 CFR sections 1.11, 1.97–1.99, 1.109, 1.194, 1.291 and 1.292.

Files Open to the Public

Section 1.11(b) is applicable only to those reissue applications filed on or after March 1, 1977. Those reissue applications already on file will not be automatically open to inspection but a liberal policy will be followed by the Office of the Solicitor in granting petitions for access to such applications.

(NOTE.—These sections as changed will be incorporated into the Manual text in Rev. 3 of the Manual.)

For those reissue applications filed on or after March 1, 1977, the following procedure will be observed:

1) The filing of reissue applications will be announced in the OFFICIAL GAZETTE and will include certain identifying data as specified in section 1.11(b). Any member of the general public may request access to a particular reissue application filed after March 1, 1977. Since no record of such request is intended to be kept, an oral request will suffice.
2) The reissue application files will be maintained in the examining groups and inspection thereof will be supervised by group personnel. Although no general limit is placed on the amount of time spent reviewing the files, the Office may impose limitation, if necessary, e.g., where the application is actively being processed.
3) Where the reissue application has left the examining group for administrative processing, requests for access should be directed to the appropriate supervisory personnel in the Division or Branch where the application is currently located.
4) Requests for copies of papers in the reissue application file must be in writing addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 and may be either mailed or delivered to the Office mailroom. The price for copies made by the Office is thirty cents per page.

Prior Art Statements

This notice supersedes the notices of August 12, 1974 (926 O.G. 2) and May 19, 1975 (935 O.G. 902) relating to citations of prior art. Although new sections 1.97 through 1.99 are not effective until July 1, 1977, and are not mandatory upon applicants, they provide an ideal mechanism for complying with the duty of disclosure under 37 CFR 1.56. The statements should be submitted in accordance with the following guidelines:

1) Prior art statements should be submitted at the time of filing the application or within three months thereafter and may be separate from the specification or incorporated therein. The statement shall serve as a representation that the person preparing it has included therein what he believes to be the closest prior art of which he is aware and shall not be construed as a representation that no better art exists or that a search has been made. If the first action in the application is received prior to three months after filing of the application and no prior art statement has been submitted, the prior art statement may be submitted with the response to the first action and be considered timely.
2) The statement shall include a listing of the patents, publications or other information which the preparer of the statement wishes to cite and a concise explanation of the relevance of each listed item. Copies of the pertinent portions of all listed documents shall be supplied along with the statement, both when incorporated into the specification and when filed separately. If two or more patents or publications considered material are substantially identical, a copy of a representative one shall be included with the statement and others may merely be listed with an indication of which are considered to be substantially identical.
3) A translation of the pertinent portions of foreign language patents or publications considered material should be transmitted if an existing translation is readily available to the applicant. It will be sufficient, however, to transmit an equivalent English language patent or publication so long as it is identified as an equivalent.

   Where the applicant has submitted copies of prior art in accordance with these guidelines in a prior application, reference to the prior application and the submission therein will be sufficient for the continuing application as far as the copies are concerned. As far as the statement per se is concerned, the relevance of the prior art to the claimed subject matter must be indicated if it differs from its relevance as explained in the prior application.
4) If prior to the issuance of a patent an applicant pursuant to his duty of disclosure under 37 CFR 1.56, wishes to bring to the attention of the Office additional patents, publications or other information not previously submitted, the additional information should be submitted to the Office with reasonable promptness. It may be included in a supplemental prior art statement or may be incorporated into other communications to be considered by the examiner. Any transmittal of additional information shall be accompanied by explanations of relevance and by copies in accordance with the requirements aforementioned. The transmittal should include a statement explaining why the prior art was not earlier submitted.

While the Patent and Trademark Office will not knowingly ignore any prior art which might anticipate or suggest the claimed invention, no assurance can be given that cited art or other information not submitted in accordance with these guidelines will be considered by the examiner.

After the claims have been indicated as allowable by the examiner, e.g., by the mailing of an Ex parte Quayle action, a notice of allowability (PTOL–327), an examiner's amendment (PTOL–37), or a Notice of Allowance (PTOL–85), any citations submitted will be placed in the file. Since prosecution has ended, however, such submissions will not ordinarily be considered by the examiner unless the citation is accompanied by:

(*a*) A proposed amendment cancelling or further restricting at least one independent claim and narrowing the scope of protection sought;
(*b*) A timely affidavit under 37 CFR 1.131 with respect to the material cited; or
(*c*) A statement by the applicant or his attorney or agent that, in the judgment of the person making the statement, the prior art or other information cited raises a serious question as to the patentability of the claimed subject matter, or is closer prior art than that of record.

If the material is submitted after the base issue fee has been paid, it must also be accompanied by a petition under 37 CFR 1.183 requesting a waiver of 37 CFR 1.312. Such petition, if granted, would result in review of the art by the examiner and possible entry of the amendment.

In each instance where an examiner considers, but does not cite on form PTO–892, specific prior art referred to in a paper placed in the application file, the examiner will place a notation adjacent to the reference according to the following:

> If included in the specification, the examiner will write his or her initials adjacent to any references checked and enter "checked" in the left margin opposite the initials. If presented in a separate paper or in the remarks of an amendment, the examiner's initials and "checked" will be entered adjacent to the citations or wherever possible to indicate clearly those checked.

Reasons for Allowance

One of the primary purposes of the change in Section 1.109 is to improve the quality and reliability of issued patents by providing a complete file history which should clearly reflect, as much as is reasonably possible, the reasons why the application was allowed. Such information facilitates evaluation of the scope and strength of a patent by the patentee and the public and may help avoid or simplify litigation of a patent.

The practice of stating the reasons for allowance is not new and the rule merely formalizes the examiner's existing authority to do so and provides applicants an opportunity to comment upon any such statement of the examiner.

When the examiner determines that it is necessary or desirable, a "Statement of Reasons for Allowance" will be prepared. The "Statement" will usually be an attachment to either a notice of allowability (PTOL–327) or Examiner's Amendment (PTOL–37). Any comments considered necessary by applicant must be submitted no later than the issue fee and should preferably *accompany* the issue fee. Submission with the issue fee avoids any delay in the processing of the application and avoids the necessity to associate the comments with the application while it is in issue except at the time the file must be pulled to record the payment of the issue fee. Such comments will be entered in the application file by the Allowed Files Branch with an appropriate notation on the "contents" list of the file wrapper, but will not be reviewed by the examiner.

Oral Hearings Before Board of Appeals

Section 1.194 clarifies the circumstances in which oral hearings should be requested and provides for oral arguments by, or on behalf of, primary examiners in certain appeals.

Under Section 1.194, the following procedures will be in effect:

1) In accordance with Section 1.192, appellants who desire an oral hearing must request the same at the time of filing the appeal brief.
2) If appellant has requested an oral hearing and the primary examiner intends to present an oral argument, the last paragraph of the examiner's answer will indicate this intention.
3) Notice of the oral hearing will be given to the appellant and, at the same time, to the primary examiner in those cases in which the primary examiner has indicated an intention to present an oral argument.
4) After an oral hearing has been confirmed and the date set as provided in Section 1.194(c), the application file will be delivered to the examiner via the appropriate Group Director at least one week prior to the date of the hearing for those cases in which the examiner is expected to be present at the hearing. In those cases where the Board requests the presentation of an oral argument by, or on behalf of, the primary examiner, the appellant will be so notified. The Board's request for an oral argument may, where appropriate, indicate specific points or questions to which the argument should be particularly directed. The application file will be returned to the Board before the hearing.
5) In those appeals in which an oral hearing has been confirmed and either the primary examiner or the Board has indicated a desire for oral argument, such oral argument may be presented whether or not appellant appears.

Protests and Public Use Proceedings

Amended sections 1.291 and 1.292 give greater recognition to the value of written protests and public use petitions and are intended as an aid in avoiding the issuance of invalid patents.

Under sections 1.291 (b) and (c) and 1.292(b), the following procedures will be observed:

1) Only in those instances where it has not been possible to serve protest papers upon the applicant, attorney or agent, should duplicates of the papers submitted be provided. In this case the appropriate examining group will attempt to get the duplicate copy to the applicant, attorney or agent. However, every effort should be made by the protester to effect service.
2) Citations of prior art and any papers related thereto may be entered in the file after a patent has been granted by submitting them to the attention of the Record Room, where they will be entered without comment by the Office. If after diligent effort it has not been possible to serve the prior art citations and related papers on the patentee, his attorney or agent, duplicate copies should be submitted in which case the Record Room will attempt to get the duplicate copy to the owner of record.
3) When public use petitions and accompanying papers are submitted they, or a notice in lieu thereof, will be entered in the application file. Duplicate copies should be submitted only when, after diligent effort, it has not been possible for petitioner to serve a copy of the petition on the applicant, his attorney or agent in which case the Office of the Solicitor will attempt to get the duplicate copy to the applicant, his attorney or agent.
4) To ensure consideration by the examiner, protests should be timely submitted, i.e., before final rejection or allowance. Consideration of protests filed after final rejection or allowance will depend upon the relevance of the prior art documents and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not knowingly be ignored. If protests are not timely submitted or if they fail to comply with section 1.291(a) as to the submission of a copy of each prior art document relied upon, they will be acknowledged and referred to the examiner having charge of the subject matter involved for entry in the application file and such consideration as seems warranted.

In each instance where an examiner considers but does not cite on form PTO–892 specific prior art referred to in a protest, the examiner will place a notation in the protest paper adjacent to the reference which will include his or her initials and the term "checked."

Additional future guidelines as to protest procedures may be developed after gaining experience with the new practice.

C. MARSHALL DANN,
Mar. 18, 1977. *Commissioner of Patents and Trademarks.*

[957 O.G. 11]

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(59) FURTHER GUIDELINES RELATING TO 37 CFR 1.175 AND 1.291, AS AMENDED EFFECTIVE MARCH 1, 1977

The experience with the above revised rules since their effective date has indicated the desirability of further guidelines relating to the manner in which they are to be implemented. The following guidelines are supplemental to those which have already been provided in the publication of the rules in the Federal Register of January 28, 1977 (42 F.R. 5588) (955 O.G. 1054, February 22, 1977), and in the earlier Guidelines published at 957 O.G. 11 on April 12, 1977. Copies of the latter two OFFICIAL GAZETTE publications appear as items 59 and 60 of the current "Consolidated Listing of Recent Official Gazette Notices" published at 966 O.G. 22–32. The present guidelines are also supplemental to the appropriate sections of the Manual of Patent Examining Procedure, e.g., Sections 1401–1401.12 relating to reissue, and Section 1309.02 relating to protests. Sections 721 and 721.01 of the MPEP contain guidelines to be followed if either a reissue or other application, or a protest relative to any application, raises

questions of "fraud" or "violation of the duty of disclosure." Accordingly, the above-noted materials should be consulted in addition to these further guidelines, which are in themselves not intended to completely treat the subjects involved. For the most part, the guidelines herein merely identify and clarify existing requirements and practices. The Patent and Trademark Office has a general study underway of the procedures for handling reissue applications and protests which may result in future modifications in these guidelines.

Section 1.175(a)(4) of the revised rules recognizes that reissues may be filed to have the patentability of the original patent, without changes therein, considered in view of prior art or other information relevant to patentability which was not previously considered by the Office.

The experience to date reveals the need to clarify what should be filed by the applicant in order to seek the reexamination contemplated by sub-section (a)(4) and also the type and content of the examination which the examiner will give to applications filed under sub-section (a)(4).

First, sub-section (a)(4) does *not* contemplate, or permit, the filing of a reissue application without an oath or declaration. To the contrary, an oath or declaration is required, and such oath or declaration *must* comply with each of sub-sections (a)(4), (a)(5), and (a)(6). Thus, under sub-section (a)(4) the oath or declaration must particularly specify the "prior art or other information relevant to patentability, not previously considered by the Office," which the reissue applicant considers "might cause the examiner to deem the original patent wholly or partly inoperative or invalid." The reissue oath or declaration must also request, under sub-section (a)(4), that "if the examiner so deems, the applicant be permitted to amend the patent and be granted a reissue patent."

Under sub-section (a)(5), the reissue oath or declaration, including those filed under sub-section (a)(4), must particularly specify "the errors or what might be deemed to be errors relied upon, and how they arose or occurred."[1] This sub-section has two specific requirements, *both of which must be complied with* in, or by, the reissue oath or declaration. Thus, insofar as (a)(4) reissue oaths or declarations are concerned, the oath or declaration must particularly specify "what might be deemed to be errors." For example, if the reissue applicant is seeking reexamination in view of particular prior art or other information, the reissue oath or declaration must point out "what might be deemed to be errors" in patentability in view of such prior art or other information. More specifically, the oath or declaration, in appropriate circumstances, might state that some or all claims might be deemed to be too broad and invalid in view of references X and Y which were not of record in the patented files. Usually, a general statement will suffice. But where appropriate, such as where the pertinence of the new references X and Y are not evident, more specificity about "what might be deemed to be errors" should be provided. Of course, the reissue applicant does *not* have to, and presumably does *not*, agree that "errors" exist. However, the reissue applicant does have to, in the reissue oath or declaration of the sub-section (a)(4) type, particularly specify "what might be deemed to be errors relied upon."

In addition to specifying "what might be deemed to be errors relied upon," sub-section (a)(5) also requires "particularly specifying" "how they arose or occurred." This means, of course, that the reissue oath or declaration must specify the manner in which that which "might be deemed to be errors" "arose or occurred." For example, if the (a)(4) reissue is being filed for reexamination in view of prior art or other information, the reissue oath or declaration must indicate when and the manner in which the reissue applicant became aware of the possible error in the patent, e.g., third party allegation, discovery of prior art or other information subsequent to issuance of patent, knowledge of prior art or other information before issuance of patent with significance being brought out after issuance by third party, through allegations made in litigation involving the patent, etc. It is particularly important that the reissue oath or declaration adequately specify how "what might be deemed to be errors" arose or occurred. If the reissue oath or declaration does not particularly specify "how," i.e., the manner in which any possible errors arose or occurred, the Office will be unable to adequately evaluate reissue applicant's statement in compliance with (a)(6) that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant."

Sub-section (a)(6) specifically requires that the reissue oath or declaration, including those filed under sub-section (a)(4), contain the averment that the "errors, if any, arose 'without any deceptive intention' on the part of the applicant." This requirement must not be overlooked in filing since the requirement for an absence of "deceptive intention" is a necessary part of any reissue application, including those of the (a)(4) type.

The significance and importance of sub-sections (a)(5) and (a)(6) must not be overlooked or minimized insofar as reissue oaths or declarations are concerned, including those filed under sub-section (a)(4). These sub-sections, to a large extent, enable the Office to make its determination required by statute that any error is "without any deceptive intention."

In addition to meeting the requirements of Sections 1.175 (a)(4)–(a)(6) insofar as the reissue oath or declaration is concerned, the reissue applicant, at the time of filing the reissue application, including the (a)(4) type reissue application, must also be aware of the requirements of 37 CFR 1.56, as revised effective March 1, 1977. Reissue applicants may, of course, utilize new Sections 1.97–1.99 to comply with the duty of disclosure required by Section 1.56. While Section 1.97(a) provides for filing of the prior art statement within three months of the filing of the application, reissue applicants are encouraged to file the prior art statement at the time of filing the application in order that such prior art statements will be available to the public during the two-month period provided by Section 1.176.

In situations in which the patent for which reexamination is being sought is, or has been, involved in litigation, which raised a question material to examination of the reissue application, such as the validity of the patent, or any allegation of fraud, the existence of such litigation must be brought to the attention of the Office at the time of, or shortly after, filing the application, either in the reissue oath or declaration, or in a separate paper, preferably accompanying the application as filed. Litigation begun after filing of the reissue application also should be promptly brought to the attention of the Office. The details and documents from the litigation, insofar as they are "material to the examination" of the reissue application as defined in 37 CFR 1.56(a), should accompany the application as filed, or be submitted as promptly thereafter as possible. For example, the defenses raised against validity of the patent, or charging fraud or inequitable conduct in the litigation, would normally be "material to the examination" of the reissue application. It would, in most situations, be appropriate to bring such defenses to the attention of the Office by filing in the reissue application a copy of the Court papers raising such defenses. As a minimum, the applicant should call the attention of the Office to the litigation, the existence and nature of any allegations relating to validity and/or "fraud" relating to the original patent, and the nature of litigation materials relating to these issues. Enough information should be submitted to clearly inform the Office of the nature of these issues so that the Office can intelligently evaluate the need for asking for further materials in the litigation. Thus, the existence of supporting materials which may substantiate allegations of invalidity or "fraud" should, at least, be fully described, or submitted. The Office is *not*, of course, interested in receiving voluminous litigation materials which are *not* relevant to the Office's consideration of the reissue application. The status of the litigation should be updated in the reissue application as soon as significant events happen in the litigation.

The Examination of Reissue Applications, Including Those Filed Under 37 CFR 1.175(a)(4)

The examination of reissue applications, including those filed under sub-section (a)(4), will be in accordance with Sections 1401–1401.12, M.P.E.P. Attention is particularly directed to Section 1401.09, M.P.E.P. which refers to the two aspects of reissue examination, i.e., examination in the same manner as an original application and examination for compliance with the reissue statute and rules. The purpose of the present guidelines is to supplement those presently in existence and to emphasize certain points, particularly as they relate to reissue applications filed under sub-section (a)(4).

When examining the reissue application the examiner will consider whether or not applicant, in the reissue oath or declaration, has complied with each of the requirements of 37 CFR 1.175. For example, in all reissue applications, the

[1] The text of sub-section (a)(5) is incorrectly reproduced in the July 1977 revision of Title 37 CFR. The text, as quoted herein, is correct.

reissue oath or declaration must comply with the requirements of the first sentence of 37 CFR 1.65. When the reissue application is other than the (a)(4) type, the reissue oath or declaration must comply with the appropriate sub-sections (a)(1) to (a)(3) and sub-sections (a)(5) and (a)(6). When the reissue application is filed under sub-section (a)(4), the reissue oath or declaration must also comply with sub-sections (a)(5) and (a)(6). Thus, all reissue applications must comply with sub-sections (a)(5) and (a)(6). If the examination reveals a lack of compliance with any requirement of Section 1.175, e.g., the requirements of sub-sections (a)(5) and/or (a)(6), a rejection will be made on the basis that the reissue oath or declaration is insufficient. See Section 1401.08, M.P.E.P. Under no circumstances will any reissue application be passed for issue without full compliance with 37 CFR 1.175.

Applications filed under sub-section (a)(4) will not, of course, be passed for issue without amendment, but will be rejected as lacking statutory basis for a reissue if *there are no other grounds for rejection*, since 35 U.S.C. 251 does not authorize reissue of a patent unless the patent is deemed wholly or partly inoperative or invalid. If a reissue filed under sub-section (a)(4) is subsequently amended thereby converting it into an application under sub-sections (a)(1) to (a)(3), *a supplemental reissue oath or declaration must be filed containing the appropriate averments.* If such a proper supplemental oath or declaration is not filed, a rejection will be made on the basis that the reissue oath or declaration is insufficient. The supplemental oath or declaration insures compliance with 35 U.S.C. 251 by providing appropriate averments relating to actual errors rather than possible errors.

If the examiner becomes aware of litigation involving the patent sought to be reissued during examination of the reissue application, and applicant has not made the details regarding that litigation of record in the reissue application, the examiner, in the next Office action, will inquire regarding the same. The following paragraph may be used for such an inquiry:

> "It has come to the attention of the examiner that the patent sought to be reissued by this application (is) (has been) involved in litigation. Any documents and/or materials, including the defenses raised against validity, or against enforceability because of fraud or inequitable conduct, which would be material to the examination of this reissue application are required to be made of record in response hereto. See 37 CFR 1.175(b)."

If the additional details of the litigation appear to be material to examination of the reissue application, the examiner may make such additional inquiries as necessary and appropriate under 37 CFR 1.175(b).

However, any application which indicates the existence of *a question* of "fraud" or "violation of the duty of disclosure" will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P., as soon as the existence of *such question* is appreciated. For example, any reissue application which seeks reexamination in view of material prior art or other information known before issuance of the patent to a person having a duty under 37 CFR 1.56(a) must be forwarded under Section 721.01, M.P.E.P., to the Assistant Commissioner via the Group Director.

The Filing of Protests Under 37 CFR 1.291

The amendments to Section 1.291 reflected the increased value the Office places on appropriate written protests as an aid in avoiding the issuance of invalid patents. The present supplemental guidelines are in addition to those previously published and referred to above.

The nature of the protest, and the timeliness of its submission, are important factors in determining the consideration which is given the protest, and by whom it is considered. Insofar as the question of timeliness is concerned, the original publication of the rules at 955 O.G. 1054, the earlier Guidelines published at 957 O.G. 11, and Section 1309.02, M.P.E.P. adequately treat this question. Protests should obviously be submitted as early in the examination process as possible in order to be of maximum benefit to the Office in its examination of the application involved.

If the protest is being filed with regard to a reissue application, the protest should be filed within the two-month period following announcement of the filing of the reissue application in the Official Gazette, if it is at all possible to do so. If, for some reason, the protest of the reissue application cannot be filed within the two-month period provided by 37 CFR 1.176, the protest can be submitted at a later time, but protestor must be aware that reissue applications are "special" and a later filed protest may be received after action by the examiner, if submitted later than the two months provided by 37 CFR 1.176. In the event a protest is intended against a reissue application, but cannot be submitted within the two months provided following the O.G. announcement, the protestor can request an additional specified period within which to file the protest, explaining why the additional time is necessary and the nature of the protest intended. A copy of any such request for additional time to protest a reissue application beyond the two months provided must be served on the reissue applicant. The request for additional time should be directed to the appropriate Group Director. The requests for additional time beyond the two months provided will be *critically reviewed as to demonstrated need* before being granted since the delay of examination of a reissue application of another party is being requested. Accordingly, the requests should be made *only where necessary, for the minimum period required* and with a justification establishing the necessity for the extension.

Any protest filed alleging "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A–13. Protests based on grounds other than "fraud" or "violation of the duty of disclosure" should be directed to the attention of the Director of the particular examining group in which the application is pending. If the protestor is unable to specifically identify the application to which the protest is directed, but, nevertheless, believes such an application to be pending, the protest should be directed to the attention of the Assistant Commissioner for Patents, Building 3, Room 11A–13, along with as much identifying data for the application as is available.

As indicated in the earlier publications, e.g., Section 1309.02, M.P.E.P., every effort should be made by a protestor to effect service of the protest upon the attorney or agent of applicant who is of record or upon the applicant. The protest filed in the Office should reflect that service has been made. Only in those instances where service is not possible should the protest be filed in duplicate in order that the Office can attempt service. Of course, the copy served upon applicant or applicant's attorney or agent should be accompanied by a copy of each prior art or other document relied upon in the same manner as required by Section 1.291(a) for the Office copy.

The Examiner's Consideration of Protests

Protests other than those alleging "fraud" or "violation of the duty of disclosure" will be received by, or forwarded to, the Group Director of the examining group where the application is, or may be, pending and then referred to the appropriate examiner. If it is then, or later, discovered that a question of "fraud" or "violation of the duty of disclosure" exists, the application and the protest, will be forwarded to the Office of the Assistant Commissioner for Patents pursuant to Section 721.01, M.P.E.P.

If no allegations or questions of "fraud" or "violation of the duty of disclosure" are found to exist, the examiner will consider the protest and report the results of the consideration to the Group Director. If the protest has been timely submitted, i.e., before final rejection or allowance, the examiner will consider each of the prior art or other documents submitted. At least those prior art documents which the examiner relies on in rejecting claims will be made of record by means of form PTO–892. If the examiner does not cite all of the prior art or other documents on form PTO–892, the examiner will place a notation in the protest paper adjacent to the reference to the documents which will include the examiner's initials and the term "checked."

If the protest is filed after final rejection or allowance of the application, the consideration by the examiner will depend upon the relevance of the prior art documents submitted and the point in time at which they are submitted. Documents which clearly anticipate or render obvious one or more claims will not be knowingly ignored. Prosecution of the application will be reopened where necessary. However, protestor must be aware that the likelihood of consideration by the Examiner decreases as the patent issue date approaches. Accordingly, protests must be filed early in order to ensure their consideration.

If the protest is not accompanied by a copy of each prior art or other document relied upon as required by Section 1.291(a), the protestor cannot be assured that the examiner will consider the missing document. However, if the examiner does so, the examiner will either cite the document on form PTO–892 or place a notation in the protest paper adjacent to the reference to the document which will include the examiner's initials and the term "checked."

If, upon considering the protest or any submissions subsequent thereto, the examiner considers it desirable to obtain applicant's comments on the protest before further action, the examiner will offer applicant an opportunity to file comments within a set period, usually two months.

The following suggested format can be used to offer applicant an opportunity to file comments on the protest:

> "A protest against the issuance of a patent based on this application has been filed under 37 CFR 1.291 on _____ and a copy (has been indicated as having been served on applicant) (is attached hereto). Any comments or response applicant desires to file before consideration of the protest must be filed by _____."

Section 1.291(a) indicates that protests are acknowledged and this acknowledgement will normally be made by the particular office to which the protest is ultimately directed for consideration. Protests alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Office of the Assistant Commissioner for Patents. Other protests, i.e., those not alleging "fraud" or "violation of the duty of disclosure" will normally be acknowledged by the Group Director of the examining group where the application is, or may be, pending.

If the protest involves an application to which the protestor has access, e.g., a reissue application filed after March 1, 1977, or one in which protestor has been formally granted access, then protestor may monitor the proceedings and file such additional papers as protestor considers appropriate. If protestor has access to the application, protestor may request the Office to supply protestor with copies of Office actions or other documents mailed by the Office. Such a request should be directed to the particular area in which the application is pending, e.g., Office of Assistant Commissioner for Patents, or Director of the particular examining group. The request should explain why protestor needs the copies in question and should indicate an intent on protestor's part to assist the Office in its examination by supplying relevant comments. Normally, the Office will send copies of Office actions to protestors where the protestor indicates an intent to review actions and, if appropriate, comment to the Office on them. However, since protestor has no right to copies of the Office actions or other documents, the granting or denying of such requests will be within the sole discretion of, and for the convenience of, the Office.

If the protestor has access to the application, the examiner may communicate with the protestor *in writing* to seek clarification and/or additional information if the examiner considers such clarification and/or additional information necessary to properly consider the protest. The following suggested format can be used by the examiner to seek clarification and/or additional information from a protestor having access to an application:

> "The protest, as filed_____, has been noted. However, clarification and/or additional information is desired. In particular [Examiner explains] any submission of the requested information should be made within ONE MONTH of the date of this letter and the submission must indicate service on applicant."

While the examiner should not normally need clarification and/or additional information from the protestor where the grounds involve only published prior art, e.g., patents, periodicals, etc., under some circumstances it may be necessary for the examiner to seek such clarification and/or additional information. For example, if the date of a reference is in question, or some question of public use is involved, and the information being sought is within the knowledge or control of the protestor, the examiner may find it necessary to communicate with the protestor to obtain the same.

Where the examiner feels that a protestor with access to an application can contribute significantly to the examination process, the protestor may be given a specific period, normally one month, within which to comment on responses submitted by patent applicants to Office actions. Such a comment period should only be provided where it would appear to be of benefit to the examination process and only with the approval of a Supervisory Primary Examiner. Where an applicant agrees to such participation by a protestor or where a Court has suspended litigation for consideration of a related application by the Patent and Trademark Office with an expression of its desire for such protestor participation, it should be more liberally granted.

Where a protestor requests permission to participate in any interview between an applicant and the examiner or requests on its own behalf to have an interview with the examiner, the request should be referred to the Office of the Assistant Commissioner for Patents for action. Normally, protestor participation in interviews with examiners will not be allowed unless special justifying circumstances exist. Where authorized, participation by the protestor in an interview will be according to conditions set down by the Patent and Trademark Office. Normally, any transcript of the interview, if authorized, will be at the expense of the party or parties requesting it and will be arranged by such party or parties. Where Office actions are being sent to a protestor or where a protestor is present for an interview, a copy of the Interview Summary Form and other records made of the interview will be provided to the protestor. Where protestor's participate in an interview, they may submit their own record of the interview which will be made of record in the file.

Interviews relating to a patent application with a protestor will not be permitted without the applicant present.

A protestor with access to an application appealed to the Board of Appeals who intends to file comments or a brief in opposition to appellant's brief should file an indication of such intention within one month after the notice of appeal is filed and serve a copy of the same upon appellant. The indication of intention should state that protestor agrees to file such comments or brief in triplicate, within one month after appellant's brief is filed, and also agrees to serve a copy of the comments or brief upon appellant. If such an indication is not filed and served, or the protestor's comments or brief is not timely filed in triplicate and served, no assurance is given that the Examiner will consider the protestor's comments or brief during the preparation of the Examiner's Answer.

A protestor who participates by the filing of comments or a brief in opposition to appellant's brief may also request, at the time of filing the comments or brief, to appear at any oral hearing. If a protestor does not file such comments or brief, the protestor cannot be present at any oral hearing. If a protestor does file such a request, the Board of Appeals, in its discretion, will decide whether or not the issues on appeal are such that protestor's participation at the hearing would be helpful. The Board of Appeals will notify protestor whether or not the request to appear at the hearing is granted and, if granted, how much time will be permitted. Of course, if appellant does not request an oral hearing, or provides timely notification to the Board and protestor that appellant will not appear, protestor will not be heard.

A copy of any examiner's letter or communication to a protestor will be mailed to applicant at the same time it is mailed to the protestor. While the examiner may communicate *in writing* with a protestor having access to the application, the examiner will *not* communicate orally and protestor must refrain from oral communications with the examiner except to ask purely procedural questions which have no relation to the substance of the protest or the merits of the application, unless specifically authorized *in writing* by the Assistant Commissioner for Patents.

Where the handling of a protest or the handling of a reissue application involved in related litigation requires an inordinately larger than normal amount of work on the part of an examiner and where otherwise warranted, Supervisory Primary Examiners may authorize the use of non-examining time for handling some or all of the examination.

The above guidelines are intended to make clearer the policies of the Patent and Trademark Office in respect to the handling of reissue applications, protests and "fraud" questions. The Office is especially interested in seeing that the consideration of reissue applications and protests is thorough and fair. It is interested in seeing that protestors have an opportunity to participate in the proceedings in the Office to the extent that such participation is helpful and appropriate in each case. It is also greatly interested in the completeness and accuracy of the file record, including indications whether or not prior art references and information mentioned in the record have been reviewed by the examiner.

The present guidelines which will be incorporated into the M.P.E.P. as soon as possible, when considered in conjunction with those previously issued and the M.P.E.P., should answer many of the questions being raised about the revised rules.

DONALD W. BANNER,
Commissioner of Patents & Trademarks.

Nov. 13, 1978.

[977 O.G. 11]

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(60) EXPEDITED PROCESSING OF REISSUE APPLICATIONS AND APPLICATIONS HAVING ISSUES OF FRAUD OR FAILURE TO COMPLY WITH THE DUTY OF DISCLOSURE

The Patent and Trademark Office has been experiencing increasing delays in the examination of reissue applications and other applications in which charges or questions of fraud or failure to comply with the duty of disclosure have been raised or are apparent on the record. Consideration of these charges involves considerable expenditures of resources and time. They also tend to delay prompt consideration on the merits in view of the prior art, etc. Considerable duplication of effort and expenditures of resources and time also may occur when the Office considers applications in circumstances where the same issues are concurrently being considered in Court.

Deferral of Fraud Issues

Effective immediately, the Office is instituting a policy of delaying consideration of issues of fraud or failure to comply with the duty of disclosure in any application until all other issues are settled.

Accordingly, under this procedure, applications having issues of fraud or failure to comply with the duty of disclosure will continue to be referred to the Office of the Assistant Commissioner for Patents, but will then be promptly returned, along with any appropriate examining instructions, to the Director of the Examining Group for immediate action by the Examiner. Decisions on Petitions to Strike applications pursuant to 37 CFR 1.56(d) will be deferred pending resolution of the patentability issues before the Examiner. Any such Petitions to Strike filed after the Office of the Assistant Commissioner has initially reviewed the application and returned it for immediate action will be acknowledged by the Examining Group Director and action on the Petition will be deferred pending completion of the patentability issues before the Examiner. Examiners will note in their Office actions the existence of issues of fraud or failure to comply with the duty of disclosure without commenting on the substance of such issues and will indicate that the issues will be considered after all other matters have been disposed of. Matters other than fraud or failure to comply with the duty of disclosure raised in a Petition to Strike, e.g., patentability in light of a reference, will be treated by the Examiner or other appropriate official. Petitions relating to procedural matters involving the examination of the applications, e.g., requests for protestor participation in interviews, will be decided by the appropriate Examining Group Director. Applications which have been referred to the Office of the Assistant Commissioner and which are required to be returned thereto before allowance or after abandonment of the application will have a notation placed on the face of the application file by the Office of the Assistant Commissioner requiring such return.

Suspension of Action Where There is Concurrent Litigation

In order to avoid duplication of effort, actions in applications in which there is an indication of concurrent litigation will be suspended automatically unless and until it is evident to the examiner, or the applicant indicates, that: (1) a stay of the litigation is in effect; (2) the litigation has been terminated; (3) there are no significant overlapping issues between the application and the litigation; or (4) it is applicant's desire that the application be examined at that time.

Expedited Examination of Reissues

All reissue applications, except those under suspension because of litigation, will be taken up for action ahead of other "special" applications; this means that all issues not deferred will be treated and responded to *immediately*. Furthermore, reissue applications involved in "stayed litigation" will be taken up for action in advance of other reissue applications.

Insofar as reissue applications for patents in litigation are concerned, the Office is presently considering modifications to the rules to provide for their examination within the two-month waiting period now provided by Section 1.176. Until appropriate modifications are made to the rules, the Office will entertain petitions under 37 CFR 1.183 to waive the delay period of 37 CFR 1.176. In addition, the Office is presently considering requiring the prompt disclosure of the existence of litigation related to a pending application.

Time monitoring systems are being put into effect which will closely monitor the time used by applicants, protestors, and examiners in processing reissue applications of patents involved in litigation in which the court has stayed further action.

Applicants in reissue applications involved in litigation which has been stayed, dismissed, etc. for consideration by the Patent and Trademark Office will normally be given one month to respond to Office actions in those situations where the Office determines that the reissue applicant can readily prepare a response in such time. This one month period may be extended upon a showing of clear justification. Of course, up to three months may be set for response if the Examiner determines such a period is justified.

Applicants and protestors submitting papers for entry in reissue applications of patents involved in litigation are requested to mark the outside envelope and the top right hand portion of the paper with the words *"REISSUE LITIGATION"* and with the unit of the PTO in which the reissue application is located—e.g., Assistant Commissioner for Patents, Board of Appeals or Examining Group. The notations preferably should be written in a bright color with a felt point marker. Papers marked *"REISSUE LITIGATION"* will be given special attention. Also, the PTO will place a prominent notation on the application file to indicate the existence of litigation.

The purpose of these changes is to reduce the time between filing and final action insofar as possible while still giving all parties sufficient time to be heard. This notice is supplemental to, and in some respects modifies, the earlier published notices on this subject and particularly the notice published at 977 O.G. 11 on December 12, 1978.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

June 5, 1979.

[983 O.G. 24]

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(61) PRIOR ART CITED BY PATENT OFFICES IN OTHER COUNTRIES

Section 1.56 of Title 37 of the Code of Federal Regulations requires patent applicants and others associated with the prosecution of a patent application before the U.S. Patent and Trademark Office to call to the Office's attention information which is material to examination. Where related or corresponding patent applications have been filed in other countries, prior art may be cited by the Patent Offices of those other countries in connection with the examination of the applications filed there. Where prior art is cited by those other Patent Offices while the U.S. application is pending, citations which are material to examination in this country and known to any of the individuals covered by Section 1.56 must be called to the attention of this Office. Attorneys and agents are reminded of their obligations in this respect.

It is suggested, of course, that such prior art be cited to the U.S. Patent and Trademark Office in a prior art statement which complies with the provisions of Sections 1.97–1.99 of 37 CFR.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

April 23, 1979.

[982 O.G. 86]

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(62) DEPOSIT OF COMPUTER PROGRAM LISTINGS

[37 CFR Part 1]

Notice of Proposed Rulemaking

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Proposed Rule.

SUMMARY: This proposed rule would amend the rules of practice to provide special procedures for presentation of

computer program listings in patent applications. This proposal would reduce the present burden of presenting such listings on paper and would also reduce expenses for both the patent applicant and the Patent and Trademark Office.

DATES: Comments must be received on or before: September 13, 1977. Hearing: September 13, 1977, beginning at 9:30 a.m.

ADDRESSES: Send comments to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Building 3, Crystal Plaza, at 2021 Jefferson Davis Highway, Arlington, Virginia. Written comments and transcript of hearing will be available for public inspection in Room 11E10 of Building 3, Crystal Plaza, at 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: Mr. Louis O. Maassel by telephone at (703) 557-3070, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: Notice is hereby given that, pursuant to the authority contained in section 6 of the Act of July 19, 1952, as amended (68 Stat. 793; 85 Stat. 364; 88 Stat. 1949; 35 U.S.C. 6 as amended) the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending Sections 1.21 and 1.77 and by adding a new Section 1.96. This proposal has been reviewed pursuant to E.O. 11821 and OMB Circular A-107 and determined to have no major inflationary impact.

The purpose of the proposed rule change is to provide suitable procedures for presenting computer program listings where such listings are submitted with applications for patent to fulfill the disclosure requirements under 35 U.S.C. 112.

This proposal does not in any way imply that the Patent and Trademark Office considers computer programs per se to be patentable subject matter.

The provisions of 37 CFR Sections 1.52 and 1.84 were developed for and are suitable for the specification and drawings of most patent applications. However, when lengthy computer program listings must be included in order to provide a complete disclosure, their presentation in the conventional manner can become burdensome.

The cost of printing long computer programs or routines in patent documents is very expensive to the Office. The issue fees for the applicant, which are based on the number of pages or sheets, are correspondingly high.

Proposed new Section 1.96 sets forth alternative methods for presentation of such listings. Under paragraph (a), relatively short computer program listings (10 printout pages or less) will be printed as part of the patent. Paragraph (b) provides for submitting computer program listings which are 51 or more paper pages in length in the form of microfiche as an appendix. Computer program listings 11–50 pages in length may be submitted under the provisions of either paragraphs (a) or (b). Appendices on microfiche will not be printed in the patent but will become publicly available on the date the patent is issued. After patenting, the appendix will be prior art under 35 U.S.C. 102(e) as of the filing date of the application with which it was filed. Various incorporations by reference have been approved by the courts in *General Electric Company* v. *Brenner*, 159 USPQ 335; In re Hawkins, 179 USPQ 157, and In re Argoudelis et al., 168 USPQ 99.

Copies of publicly available computer program listing appendices may be purchased either as microfiche (148 mm x 105 mm card) at $1.00 per microfiche or as printed out on paper copy 30¢ per page.

The micrographic standards referred to in proposed Section 1.96(b)(2) may be obtained from either the National Micrographic Association, 8728 Colesville Road, Silver Spring, Maryland 20910 or the American National Standards Institute, 1430 Broadway, New York, New York, 10018.

1. Section 1.21 is proposed to be amended by adding a new paragraph (1) to read as follows:

Section 1.21. *Patent and miscellaneous fees and charges.*

* * * * *

(1) The fee for obtaining a microfiche copy, per microfiche ---------- $1.00

* * * * *

2. Section 1.77 is proposed to be amended by revising paragraph (c) to read as follows:

Section 1.77. *Arrangement of application.*

* * * * *

(c) (1) Cross-reference to related applications, if any.

(2) Reference to material incorporated by reference, if any. (See Sections 1.96(b) and (c)).

* * * * *

3. A new Section 1.96 is proposed to be added which reads as follows:

Section 1.96. *Submission of computer program listings.*

Computer program listings may be submitted in the following forms:

(a) *As part of application which is to appear in the patent.* If the computer program listing is contained on 10 printout pages or less, it may be submitted either as drawings or as part of the specification.

(1) *Drawings.* The listing may be submitted in the manner and complying with the requirements for drawings as provided in Section 1.84. At least one figure numeral is required on each sheet of drawing.

(2) *Specification.*

(i) The listing may be submitted as part of the specification in accordance with the provisions of Section 1.52, at the end of the description but before the claims.

(ii) The listing may be submitted as part of the specification in the form of computer printout sheets commonly (11 by 14 inches in size) for use as "camera ready copy" when a patent is subsequently printed. Such computer printout sheets must be original copies from the computer with dark solid black letters, on white, unshaded and unlined paper, the printing on each sheet must be limited to an area 9 inches high by 11 inches wide, and the sheets should be submitted in a protective cover. When printed in patents, such computer printout sheets will appear at the end of the description but before the claims and will be reduced about ½ in size with two printout sheets being printed as one patent specification page. Any corrections must be made by way of substitute sheets.

(b) *As an appendix which will not be printed.* If a computer program listing printout is more than 51 pages long, applicants must submit such listing in the form of microfiche, referred to in the specifications. The microfiche filed with a patent application is referred to as an appendix. The microfiche appendix will not be part of the printed patent. Reference in the application to the appendix should be made at the location indicated in Section 1.77(c).

(1) *Availability of appendix.* Such computer program listings on microfiche will be available to the public, and paper or microfiche copies will be available for purchase, after a patent is granted based on such an application. Any corrections must be made by way of revised microfiche.

(2) *Submission requirements.* Computer-generated information submitted as an appendix to an application for patent shall be in the form of microfiche in accordance with the standards set forth in National Micrographics Association (NMA) Standards—

MS1—Quality Standards for Computer Output Microfilm

MS2 (ANSI PH 5.18-1976)—Format and Coding Standards for Computer Output Microfilm

MS5 (ANSI PH 5.9-1975)—Microfiche of Documents

ANSI PH 2.19-1959—"Diffuse Transmission Density"—

except as modified or clarified below:

(i) Film submitted shall be first generation (camera film) negative appearing microfiche (wth emulsion on the back side of the film when viewed with the images right reading).

(ii) Either Computer-Output-Microfilm (COM output or copies of photographed paper copy may be submitted. In the former case, NMA standards MS1 and MS2 apply; in the latter case, standard MS5 applies.

(iii) Reduction ratio of microfiche submitted should be 24:1 or a similar ratio where variation from said ratio is required in order to fit the documents into the image area of the microfiche format used.

(iv) Film submitted shall have a thickness of at least .005 inches (0.13 mm) and not more than .009

inches (0.23 mm) for either cellulose acetate base or polyester base type.

(v) Both microfiche formats A1 (98 frames, 14 columns x 7 rows) and A3 (63 frames, 9 columns x 7 rows) which are described in NMA standard MS2 (A1 is also described in MS5) are acceptable for use in preparation of microfiche submitted.

(vi) At least the left-most ⅛ (50 mm x 12 mm) of the header of each microfiche submitted shall be clear or positive appearing so that the Patent and Trademark Office can apply serial number and filing date thereto in an eye-readable form. The middle portion of the header shall be used by applicant to apply an eye-readable application title together with inventor's name and any other bibliographic information the applicant sees fit to include. The final right-hand portion of the microfiche shall contain sequence information for the microfiche such as 1 of 4, 2 of 4, etc.

(vii) Additional requirements which supply specifically to microfiche of filmed paper copy or COM microfiche:

(a) Microfiche of filmed paper copy.

(1) The first frame of each microfiche submitted shall contain a standard NBS Microcopy Resolution Test Chart (No. 1010A).

(2) The second frame of each microfiche submitted must contain a fully descriptive title.

(3) The pages appearing on the microfiche frames should be consecutively numbered.

(4) Pagination of the microfiche frames shall be left to right and from top to bottom.

(5) At a reduction of 24 :1 resolution of the original microfilm shall be at least 120 lines per mm (5.0 target) so that reproduction copies may be expected to comply with provisions of paragraph 7.1.4 of NMA Standard MS5.

(6) Background density of negative-appearing camera master microfiche of filmed paper documents shall be within the range 0.9 to 1.2 and line density should be no greater than 0.08. The density shall be visual diffuse density as measured using the method described in ANSI Standard PH 2.19–1959.

(7) A suitable index should be included on each microfiche.

(b) Microfiche generated by COM.

(1) Background density of negative-appearing COM-generated camera master microfiche shall be within the range of 1.7 to 2.0 and line density should be no greater than 0.2. The density shall be visual diffuse density as described in ANSI PH 2.19–1959.

(2) The first frame of each microfiche submitted shall contain a resolution test frame in conformance with NMA Standard MS1 (3.1.1).

(3) The second frame of each microfiche submitted must contain a fully descriptive title together with any other suitable index or other appropriate information.

(4) The pages appearing on the microfiche frames should be consecutively numbered.

(5) It is preferred that pagination of the microfiche frames be from left to right and top to bottom but the alternative, i.e., from top to bottom and from left to right, is also acceptable.

(c) *Optional use of either paragraph (a) or (b).* If the computer program listing is 11–50 pages long, applicants may utilize either the procedures of paragraph (a) or (b) of this section.

June 1, 1977. C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Approved June 7, 1977.

JORDAN J. BARUCH,
Assistant Secretary for Science and Technology.

[FR Doc. 77–17030; Filed 6–14–77; 8:45 a.m.]
42 FR 30522, June 15, 1977

[960 O.G. 2]

(Pending—No Final Action Taken)

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(63) PRACTICE RE: APPLICATIONS INVOLVING COMPUTER PROGRAMS

On November 18, 1976, the Court of Customs and Patent Appeals decided the cases of *In re Noll* and *In re Chatfield.* In both cases the Board of Appeals had taken the position that the claims were drawn to non-statutory subject matter under the Supreme Court's decision in *Gottschalk* v. *Benson*, 409 U.S. 63, 175 USPQ 673 (1972). The Noll application claims were drawn to an apparatus and the Chatfield application claims were drawn to a method.

The CCPA reversed the Board of Appeals in both cases. Until these decisions become final and since further review or clarification may be forthcoming, the patent examining corps will continue to examine computer programming applications in accordance with its current interpretation of the Supreme Court decision in the Benson case.

Prosecution will be resumed on all applications previously suspended under 37 CFR 1.103(b). No further programming applications will be suspended at the instance of the Office.

C. MARSHALL DANN,
Dec. 14, 1976. *Commissioner of Patents and Trademarks.*

[954 O.G. 550]

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(64) PRIORITY CLAIMS BASED ON INVENTORS CERTIFICATES

Pursuant to the provisions of 35 U.S.C. 119, last paragraph (as amended July 28, 1972), 37 CFR 1.55(c) requires that when an applicant wishes to claim a right of priority on the basis of an application for an inventor's certificate, ". . . the applicant or his attorney or agent, when submitting a claim for such right . . . shall include an affidavit or declaration including a specific statement that, upon an investigation, he has satisfied himself that to the best of his knowledge the applicant, when filing his application for the inventor's certificate, had the option to file an application either for a patent or for an inventor's certificate as to the subject matter of the identified claim or claims forming the basis for the claim of priority."

As such, it has been and remains the position of the Patent and Trademark Office that, in accordance with 35 U.S.C. 119, applications for inventors' certificates shall give rise to a right of priority only when the country in which they are filed gives to applicants, at their discretion, the right to apply, on the same invention, either for a patent or for an inventor's certificate. The affidavit or declaration specified under 37 CFR 1.55(c) is only required for the purpose of ascertaining whether, in the country where the application for an inventor's certificate originated, this option generally existed for applicants with respect to the particular subject matter of the invention involved. The requirements of 35 U.S.C. 119 and 37 CFR 1.55(c) are not intended, however, to probe into the eligibility of the particular applicant to exercise the option in the particular priority application involved.

It is recognized that certain countries that grant inventors' certificates also provide by law that their own nationals who are employed in state enterprises may only receive inventors' certificates and not patents on inventions made in connection with their employment. This will not impair their right to be granted priority in the United States based on the filing of the inventor's certificate.

Accordingly, affidavits or declarations filed pursuant to 37 CFR 1.55(c) need only show that in the country in which the original inventor's certificate was filed, applicants generally have the right to apply at their own option either for a patent or an inventor's certificate as to the particular subject matter of the invention.

C. MARSHALL DANN,
Aug. 17, 1977. *Commissioner of Patents and Trademarks.*

[962 O.G. 14]

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(65) REQUIREMENTS FOR PRIORITY DOCUMENTS, PRIORITY BASED ON APPLICATION FOR INDUSTRIAL DESIGN

In the Federal Republic of Germany, an application for protection of an industrial design may be accompanied by either a model or a drawing. It is understood that German residents file such applications with their local judicial authority ("Amtsgericht") rather than with the German Patent Office in Munich.

Questions have been raised in this connection as to:

(1) What sort of priority document under 35 U.S.C. 119 is required when the original filing has comprised a model rather than a drawing, and

(2) Whether it is necessary where the original filing was with a local judicial authority to obtain also a certificate from the national patent office.

As to the first question, the Patent and Trademark Office will receive under 35 U.S.C. 119, as evidence of an earlier filed design application which included the deposit of a model, drawings or acceptable photographs of the deposited model faithfully reproducing the design embodied therein together with other required information, certified by an official of the court or office with which the application was originally filed.

No additional certification by the national patent office will be required. Article 4D(3) of the Paris Convention refers to certification ". . . by the authority which received such application . . ." so the reference in 35 U.S.C. 119 to "patent office" will be construed to extend also to the authority in charge of the design register.

Aug. 15, 1977. C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

[962 O.G. 14]

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(66) RIGHT OF PRIORITY (35 U.S.C. 119) BASED ON A FOREIGN APPLICATION FILED UNDER A BILATERAL OR MULTILATERAL TREATY

Under Article 4A of the Paris Convention for the Protection of Industrial Property (21 UST 1583; 24 UST 2140; TIAS 6923, 7727; 852 O.G. 511) a right of priority may be based either on an application filed under the national law of a foreign country adhering to the Convention or on a foreign application filed under a bilateral or multilateral treaty concluded between two or more such countries. Examples of such treaties are the Hague Agreement Concerning the International Deposit of Industrial Designs, the Benelux Designs Convention, and the Libreville Agreement of September 13, 1962, relating to the creation of an African and Malagasy Industrial Property Office. The Convention on the Grant of European Patents and the Patent Cooperation Treaty will be further examples of such treaties once they enter into force.

The Priority Claim

In claiming priority of a foreign application previously filed under such a treaty, certain information must be supplied to the Patent and Trademark Office. In addition to the application number and the date of the filing of the application, the following information is required: (1) the name of the treaty under which the application was filed, (2) the name of at least one country other than the United States in which the application has the effect of, or is equivalent to, a regular national application, and (3) the name and location of the national or intergovernmental authority which received such application.

Certification of the Priority Papers

Section 119 of Title 35 of the United States Code requires the applicant to furnish a certified copy of priority papers. Certification by the authority empowered under a bilateral or multilateral treaty to receive applications which give rise to a right of priority under Article 4A(2) of the Paris Convention will be deemed to satisfy the certification requirement.

Aug. 9, 1977. C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

[962 O.G. 2]

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(67) ABSTRACT OF THE DISCLOSURE

This notice is intended to announce a change in the examining practice concerning review of the abstract for compliance with the guidelines set forth in MPEP 608.01(b).

At present, the examiner is instructed to review the abstract for compliance with the guidelines when passing the case to issue, making any necessary revisions by examiner's amendment. This policy has led to the necessity for many changes by the examiner which could have and should have been made at an earlier point in the prosecution. For example, abstracts in excess of the 250 word limit require cancellation and/or rewriting of portions thereof. This 250 word limit is strictly enforced since it represents a requirement of the printing process and the printed patent format designed to present a maximum amount of information concerning a patent on a single page.

Effective immediately, examiners are to require correction of the abstract at the earliest point in the prosecution that non-compliance with the guidelines is detected. Applicants are expected to observe the guidelines in drafting the abstract and correct any defect that is identified in an Office action. Applicants are encouraged to make the necessary corrections not only to relieve the examiner of this burden, but also to help avoid any potential conflict with respect to altering the scope of the enabling disclosure. In this regard, it should be noted that the abstract of the disclosure has been interpreted to be a part of the specification for the purposes of compliance with paragraph 1 of 35 USC 112. *In re Armbruster,* 512 F2d 676, 185 USPQ 152 (CCPA 1975). However, although it is preferable for applicant to make any necessary changes, the examiner will retain the authority and responsibility for reviewing, editing and revising the abstract of the disclosure at the time of allowance of the application to assure compliance with the guidelines.

Section 608.01(b) of the Manual of Patent Examining Procedures will be amended appropriately.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.
Dec. 30, 1977.

[967 O.G. 2]

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(68) SUPPLEMENTAL GUIDELINES FOR THE IMPLEMENTATION OF 37 CFR 1.109—REASONS FOR ALLOWANCE

A recent review of recorded statements of reasons for allowance indicates the need for a better understanding regarding implementation of new Rule 109 (37 CFR 1.109).

These guidelines are supplemental to those published in the OFFICIAL GAZETTE at 957 O.G. 11 on April 12, 1977 and amplified in Section 1302.14 MPEP, Rev. 52, April 1977.

In determining whether reasons for allowance should be recorded the primary consideration lies in the first sentence of the Rule:

> "If the examiner believes that the record of the prosecution *as a whole* does not make clear his reasons for allowing a claim or claims, the examiner may set forth such reasoning." (Emphasis added.)

In most cases the examiner's actions and the applicant's response make evident the reasons for allowance, satisfying the "record as a whole" proviso of the rule. This is particularly true when applicant fully complies with 37 CFR 1.111 (b) and (c), 37 CFR 1.119 and 37 CFR 1.133(b). Thus where the examiner's actions clearly point out the reasons for rejection and the applicant's response explicitly represents reasons why claims are patentable over the reference, the reasons for allowance are in all probability evident from the record and no statement should be necessary. Conversely, where the record is not explicit as to reasons, but allowance is in order, then a logical extension of 37 CFR 1.111, 1.119

and 1.133 would dictate that the examiner should make reasons of record and such reasons should be specific.

Where specific reasons are recorded by the examiner, care must be taken to insure that such reasons are accurate, precise and do not place unwarranted interpretations, whether broad or narrow, upon the claims. The examiner should keep in mind the possible misinterpretations of his statement that may be made and its possible estoppel effects. Each statement should include at least: (1) the major difference in the claims not found in the prior art of record, and (2) the reasons why that difference is considered to define patentably over the prior art if either of these reasons for allowance is not clear in the record. The statement is not intended to necessarily state all the reasons for allowance or all the details why claims are allowed and should not be written to specifically or impliedly state that all the reasons for allowance are set forth.

Under the rule, the examiner must make a judgement of the individual record to determine whether or not reasons for allowance should be set out in that record. These guidelines, then, are intended to aid the examiner in making that judgement. They comprise illustrative examples as to applicability and appropriate content. They are not intended to be exhaustive.

Examples of When It Is Likely That a Statement Should Be Added to the Record

1. Claims are allowed on the basis of one (or some) of a number of arguments and/or affidavits presented and a statement is necessary to identify which of these were persuasive, for example:
   a. When the arguments are presented in an appeal brief.
   b. When the arguments are presented in an ordinary response with or without amendment of claims.
   c. When both an affidavit under 37 CFR 1.131 and arguments under 102 and 103 are presented.
2. First action issue:
   a. Of non-continuing application wherein claims are very close to cited prior art and differences have not been discussed elsewhere.
   b. Of continuing applications wherein reasons for allowance are not apparent from the record in the parent case or clear from preliminary filed matters.
3. Withdrawal of a rejection for reasons not suggested by applicant, for example:
   a. As a result of an appeal conference.
   b. When applicant's arguments have been misdirected or are not persuasive alone and the Examiner comes to realize that more cogent argument is available.
   c. When claims are amended to avoid a rejection under 35 USC 102 but arguments (if any) fail to address the question of obviousness.
4. Allowance after remand from the Board of Appeals.
5. Allowance coincident with the citation of newly found references that are very close to the claims, but claims are considered patentable thereover:
   a. When reference is found and cited (but not argued) by applicant.
   b. When reference is found and cited by Examiner.
6. Where the reasons for allowance *are* of record but in the Examiner's judgement, are unclear (e.g. spread throughout the file history) so that an unreasonable effort would be required to collect them.
7. Allowance based on claim interpretation which might not be readily apparent, for example:
   a. Article claims in which method limitations impart patentability.
   b. Method claims in which article limitations impart patentability.
   c. Claim is so drafted that "non-analogous" art is not applicable.
   d. Preamble or functional language "breathes life" into claim.

Examples of Statements of Suitable Content

1. The primary reason for allowance of the claims is the inclusion of .03 to .05 percent nickel in all the claims. Applicant's second affidavit, in example 5 shows unexpected results from this restricted range.
2. During two telephonic interviews with applicant's attorney, Mr. — on 5/6 and 5/10/77, the Examiner stated that Applicant's remarks about the placement of the primary teaching's grid member were persuasive, but he pointed out that applicant did not claim the member as being within the reactor. Thus, an amendment doing such was agreed to.
3. The instant application is deemed to be directed to an unobvious improvement over the invention patented in Pat. No. 3,953,224. The improvement comprises baffle means *12* whose effective length in the extraction tower may be varied so as to optimize and to control the extraction process.
4. Upon reconsideration, this application has been awarded the effective filing date of S.N. ————. Thus the rejection under 35 USC 102(d) and 103 over Belgian Patent No. 757,246 is withdrawn.
5. The specific limitation as to the pressure used during compression was agreed to during the telephone interview with applicant's attorney. During said interview, it was noted that applicants contended in their amendment that a process of the combined applied teachings could not result in a successful article within the amended pressure range. The Examiner agreed to rely on this statement (see page 3, bottom, of applicant's amendment), and the case was allowed.
6. In the Examiner's opinion, it would not be obvious to a person of ordinary skill in the art first to eliminate one of top members 4, second to eliminate plate 3, third to attach remaining member 4 directly to tube 2 and finally to substitute this modified handle for the handle 20 of Nania (see Fig. 1) especially in view of applicant's use of term "consisting."

Examples of Statements That Are Not Suitable as to Content

1. The 3 roll press couple has an upper roll 36 which is swingably adjustable to vary the pressure selectively against either of the two lower rolls. (NOTE: The significance of this statement may not be clear if no further explanation is given.)
2. The main reasons for allowance of these claims are applicant's remarks in the appeal brief and an agreement reached in the appeals conference.
3. The instant composition is a precursor in the manufacture of melamine resins. A thorough search of the prior art did not bring forth any compositions which corresponds to the instant compositions. The Examiner in the art also did not know of any art which could be used against the instant composition.
4. Claims 1–6 have been allowed because they are believed to be both novel and unobvious.

The examiner should *not* include in his statement any matter which does not relate directly to the reasons for allowance. For example:

5. Claims 1 and 2 are allowed because they are patentable over the prior art. If applicants are aware of better art than that which has been cited, they are required to call such to the attention of the Examiner.
6. The reference Jones discloses and claims an invention similar to applicant's. However, a comparison of the claims, as set forth below, demonstrates the conclusion that the inventions are non-interfering.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Jan. 24, 1978.

[968 O.G. 6]

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(69) PRACTICE/RE: NEW GROUNDS OF REJECTION AFTER APPEAL BRIEF HAS BEEN FILED

A new practice has been implemented in the Patent Examining Corps to promote uniformity and adherence to guidelines in situations where a new ground of rejection is made in an Office action after an appeal brief has been filed. Under this practice Supervisory Patent Examiner approval is required for any new ground of rejection made after the filing of an Appeal Brief. This requirement extends to new grounds of re-

jection made either in an examiner's answer or in an Office action reopening prosecution. Evidence of that approval should appear on applicant's copy of the Office action or answer as well as the record copy. Consultation with or approval by the Group Director is no longer required in these situations.

This new practice does not alter the existing guidelines for reopening prosecution (MPEP) 706.7(e)) or for making a new ground of rejection in an examiner's answer (MPEP 1208.01). Appropriate modifications will be made to applicable Sections of the Manual of Patent Examining Procedure in a future revision.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

[970 O.G. 94 (5–23–78)]

(70) COMMERCIAL SUCCESS AND OTHER CONSIDERATIONS BEARING ON OBVIOUSNESS

In order to clarify Office practice relative to considerations of commercial success and other items bearing on obviousness, the following changes are being made in the Manual of Patent Examining Procedure.

In section 716, subsection 4, change the sub-title and first paragraph to read as follows:

4. *Commercial Success and Other Considerations Bearing on Obviousness*

Affidavits or declarations submitting evidence of commercial success, long-felt but unsolved needs, failure of others, etc., must be considered by the Examiner in determining the issue of obviousness of claims for patent-ability under 35 U.S.C. 103. Such evidence might be utilized to give light to circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or unobviousness, such evidence may have relevancy. *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966); *In re Palmer*, 172 USPQ 126, 451 F.2d 1100 (CCPA 1971); *In re Fielder and Underwood*, 176 USPQ 300, 471 F.2d 640 (CCPA 1973). The *Graham* v. *John Deere* pronouncements on the relevance of commercial success, etc. to a determination of obviousness were not negated in *Sakraida* v. *Ag Pro*, 425 U.S. 273, 189 USPQ 449 (1976) or *Andersons Black Rock, Inc.* v. *Pavement Salvage Co., Inc.*, 396 U.S. 57, 163 USPQ 673 (1969), where reliance was placed upon *A & P Tea Co.* v. *Supermarket Corp.*, 340 U.S. 147 87 USPQ 303 (1950). See *Dann* v. *Johnston*, 425 U.S. 219, 189 USPQ 257 (1976), at 261, footnote 4.

The weight attached to evidence of commercial success, etc. by the Examiner will depend upon its materiality to the issue of obviousness and the amount and nature of the evidence. Note the great reliance apparently placed on this type of evidence by the Supreme Court in upholding the patent in *United States* v. *Adams*, 383 U.S. 39, 148 USPQ 479 (1966).

Evidence of commercial success, etc. must be commensurate in scope with the scope of the claims [*In re Tiffin*, 448 F.2d, 791, 171 USPQ 294 (1971)]. Further in considering evidence of commercial success, care should be taken to evaluate, to the extent possible from the evidence submitted, whether the commercial success alleged is directly derived from the invention claimed, in a marketplace where the consumer is free to choose on the basis of objective principles, and that such success is *not* the result of heavy promotion or advertising, shift in advertising consumption by purchasers normally tied to applicant or assignee, or other business events extraneous to the merits of the claimed invention, etc. [*In re Mageli et al*, 176 USPQ 305, (CCPA 1973)]; [*In re Noznick et al*, 178 USPQ 43, (CCPA 1973)].

Similarly in considering evidence of longfelt but unsolved needs and failure of others, care should be taken to determine whether such failures were due to lack of interest or appreciation of an invention's potential or marketability rather than want of technical know-how [*Scully Signal Co.* v. *Electronics Corp. of America*, 196 USPQ 657 (1st Cir. 1977)].

In section 716, subsection 4, add the following as the last paragraph:

If, after evaluating the evidence, the examiner is still not convinced that the claimed invention is patentable, his action should include a simple statement to that effect, identifying the reason(s) (e.g., evidence of commercial success not convincing, the commercial success not related to the technology, etc.).

July 10, 1978. RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

[973 O.G. 34]

(71) HANDLING OF DEPENDENT CLAIMS BY THE EXAMINER

Effective immediately, the following practice will be followed by patent examiners when making reference to a dependent claim—either singular or multiple. The new practice is intended to simplify and streamline our current practice (MPEP 608.01(n), Revision 55, January 1978) which experience indicates was unnecessarily burdensome in many cases.

1. **When identifying a singular dependent claim which does not include a reference to a multiple dependent claim, either directly or indirectly, reference should be made only to the number of the dependent claim.**
2. **When identifying the embodiments included within a multiple dependent claim, or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, each embodiment should be identified by using the number of the claims involved, starting with the highest, *to the extent necessary* to specifically identify each embodiment.**
3. **When all embodiments included within a multiple dependent claim or a singular dependent claim which includes a reference to a multiple dependent claim, either directly or indirectly, are subject to a common rejection, objection or requirement, reference may be made only to the number of the dependent claim.**

The following table illustrates the intended differences between current and the revised practice where each embodiment of each claim must be treated on an individual basis:

Claim Number	Claim Dependency	Identification	
		Current Practice	Revised Practice
1	Independent	1	1
2	Depends from 1	2/1	2
3	Depends from 2	3/2/1	3
4	Depends from 2 or 3	4/2/1	4/2
		4/3/2/1	4/3
5	Depends from 3	5/3/2/1	5
6	Depends from 2, 3 or 5	6/2/1	6/2
		6/3/2/1	6/3
		6/5/3/2/1	6/5
7	Depends from 6	7/6/2/1	7/6/2
		7/6/3/2/1	7/6/3
		7/6/5/3/2/1	7/6/5

When all embodiments in a multiple dependent claim situation (claims 4, 6 and 7 above) are subject to a common rejection, objection or requirement, reference may be made only to the number of the individual dependent claim. For example, if 4/2 and 4/3 were subject to a common ground of rejection, reference should be made only to claim 4 in the statement of that rejection.

The provisions of 35 USC 132 require that each Office action make it explicitly clear what rejection, objection and/or requirement is applied to each claim embodiment.

WILLIAM FELDMAN,
Oct. 17, 1978. *Deputy Assistant Commissioner.*

[976 O.G. 128]

(72) Microorganisms–Patentable Subject Matter

The decision of the Supreme Court in *Diamond* v. *Chakrabarty* (206 U.S.P.Q. 193) held that microorganisms produced by genetic engineering are not excluded from patent protection by 35 U.S.C. § 101. It is clear from the Supreme Court decision that the question of whether or not an invention embraces living matter is irrelevant to the issue of patentability.

Accordingly, the Patent and Trademark Office is now examining patent applications including claims to microorganisms which had been under suspension. Assuming that

the products involved were the result of human intervention and were not products of nature, such claims will not be rejected under 35 U.S.C. § 101 as directed to unpatentable subject matter.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Date: July 29, 1980.

[997 O.G. 24]

(73) **Department of Commerce**

PATENT AND TRADEMARK OFFICE

Designation of International Depository Authorities under the Budapest Treaty

The Budapest Treaty an the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure came into force on Aug. 19, 1980 with respect to the United States, Bulgaria, France, Hungary and Japan. A copy of the Treaty was published in the OFFICIAL GAZETTE on Aug. 23, 1977 (961 O.G. 21–26).

This Treaty authorizes each State for which the Treaty is in effect to designate a depository on its territory to serve as an international depository authority. More than one depository may be designated. Each such depository will be authorized to receive and store deposits, and dispense samples thereof, in compliance with the Treaty and the patent laws of each State adhering thereto. The Treaty is open for adherence by any member State of the Paris Union for the Protection of Industrial Property.

The Commissioner of Patents and Trademarks hereby solicits requests from private and public depositories located in the United States to serve as international depository authorities. Requests should be addressed to: Sidney A. Diamond, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Each request must explain and, to the extent practicable, provide evidence of the depository's capacity to meet the obligations of the Treaty. Such request must also include an offer by the depository to assume the cost of transferring deposits made under the Treaty to another international depository authority in the event of default of any of its Treaty obligations. The availability of funds for such transfer, if needed, must be available through a bond, special reserve fund, escrow or other means judged suitable by the Commissioner.

Requests will be promptly evaluated by the Commissioner of Patents and Trademarks, and each requesting depository promptly notified of the decision reached. Questions or inquiries concerning this notice may be addressed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557–3065.

The World Intellectual Property Organization, in Geneva, Switzerland, the Secretariat for the Paris Union, has provided a memorandum explaining the role and obligations of international depository authorities. This memorandum is reproduced below for the guidance of depositories in requesting recognition as an international depository authority.

MEMORANDUM

For the purposes of prospective international depositary authorities under the Budapest Treaty

Introduction

1. This memorandum contains information for the benefit of any depositary institutions (culture collections) that may wish to become "international depositary authorities" under the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure (done at Budapest on Apr. 28, 1977). Its brevity is such that it cannot be exhaustive. Any interested person requiring full information should refer to the relevant provisions of the Budapest Treaty and the Regulations under it (any reference hereinafter to an "Article" or to a "Rule" is a reference to an Article of the Budapest Treaty or to a Rule of the Regulations under it).

Objectives of the Budapest Treaty

2. Disclosure of the invention is a generally recognized requirement for the grant of patents (for the purposes of this memorandum, the word "patent" also covers other titles of protection, such as inventors' certificates). Normally, an invention is disclosed by means of a written description. Where an invention involves the use of a microorganism that is not available to the public, such a description is not sufficient for disclosure, since the invention could not be used by a person skilled in the art. That is why in the patent procedure of an increasing number of countries it is necessary not only to file a written description but also to deposit, with a depositary institution, a sample of the microorganism. When protection for the invention is sought in several countries, the complex and costly procedures of the deposit of the microorganism might have to be repeated in each of those countries. The objective of the Budapest Treaty is precisely to obviate such multiple deposits: under the Treaty a single deposit with one "international depositary authority" is sufficient for the purposes of patent procedure before the industrial property offices of all Contracting States, and of inter-governmental organizations granting regional patents which have declared that they recognize the effects of the Treaty (Articles 3(1)(a) and 9(1)(a)).

General Remarks on International Depositary Authorities

3. "International depositary authorities" are depositary institutions that have acquired the status of international depositary authorities. To obtain this status, a depositary institution has to be located on the territory of a Contracting State or of a member State of one of the organizations referred to in the preceding paragraph, and has to benefit from "assurances" furnished by that Contracting State or organization to the effect that the institution complies and will continue to comply with the requirements referred to in paragraph 5 below (Article 6(1)). The action for acquiring this status is taken by the State or organization concerned (Article 7 and Rule 3). There is nothing to prevent it from making more than one depositary institution acquire such status: it is therefore possible for there to be several international depositary authorities located on the territory of one and the same State.

4. An international depositary authority can lose its status either entirely (in which case "termination of status" is spoken of) or partly, in other words in respect of certain types of microorganisms only (in which case "limitation of status" is spoken of). Loss of the status occurs if the State or organization whose action brought about the acquisition of the status denounces the Treaty or withdraws the declaration of recognition of the effects of the Treaty (in which case the loss of status can only be total), or if the State or organization withdraws its assurances regarding the international depositary authority, or again by virtue of a decision of the Assembly of Contracting States taken at the request of another Contracting State or another organization (Articles 8, 9(4) and 17(4); Rule 4).

Requirements Which Have to be Met by International Depositary Authorities

5. The requirements referred to in paragraph 3 above which a depositary institution has to meet in order to become a depositary authority are the following (Article 6(2) and Rule 2):

(a) The institution has to have a continuous existence. It has to be impartial and objective—which means among other things that it has to be free of any dependence on interests that are liable to prejudice the disinterested performance of its functions—and it has to be available, for the deposit of microorganisms, to any depositor under the same conditions. These requirements, which in fact seem self-evident, are designed to give the public in general and depositors in particular fundamental guarantees of reliability as to the smooth operation of the system. On the other hand, the legal status of the institution is irrelevant: it may be either public or private.

(b) The institution has to have the necessary staff and facilities to perform its scientific and administrative tasks, which consist among other things in:

(i) accepting for deposit any or certain kinds of microorganisms;

(ii) examining the viability of the microorganisms deposited with it and issuing a receipt to the depositor and

any required viability statement (see paragraphs 7 and 8 below);

(iii) storing the deposited microorganism for at least 30 years (Rule 9(1)) in such a way as to keep them viable and uncontaminated;

(iv) providing for sufficient safety measures to minimize the risk of losing the deposited microorganisms;

(v) complying, with respect to the microorganisms deposited under the Treaty, with the requirement of secrecy, which means giving no information to anyone on the question whether a microorganism has been thus deposited and giving no information to anyone (except to a person who is entitled to a sample—see paragraph 10 below) on any microorganism thus deposited (Rule 9(2));

(vi) furnishing, rapidly and in an appropriate manner, samples of the deposited microorganisms to all those who are entitled to such samples (see paragraph 10 below).

Handling of Microorganism Deposits by the International Depositary Authority

6. *Reception of the microorganism.* The international depositary authority may require that the microorganism be deposited in an appropriate form and quantity, and that it be accompanied by a form established by that authority. In such a case, the said authority has to communicate its requirements (and any amendments to them) to the International Bureau in order that the latter may communicate them to all the depositors concerned (Rules 6.3 and 13.2(b)(v)). When it receives the microorganism, the international depository authority notes the date of receipt of the deposit and gives it an accession number (Rule 7.3(iii) and (v)). It issues a receipt to the depositor attesting the receipt and acceptance of the deposit (Rule 7). The model of the international form for the receipt, the use of which will be mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

7. *Viability test.* The international depositary authority promptly tests the viability of the microorganism; it also undertakes viability tests at reasonable intervals, depending on the kind of microorganism and its possible storage conditions, or at any time, if necessary for technical reasons or at the request of the depositor (Rule 10.1).

8. *Viability statement.* The international depositary authority issues a statement concerning the viability of the microorganism to the depositor or to any person receiving a sample of the microorganism (see paragraph 10 below) (Rule 10.2). The model of the international form for the viability statement, the use of which is mandatory, will be established by the Director General of WIPO and communicated to all international depositary authorities.

9. *Storage of the microorganism.* The international depositary authority stores the microorganism for a period of at least 30 years after the date of its deposit, or until five years have elapsed without its having received a request for a sample, the period expiring later being applicable (Rule 9.1). It complies with the requirement of secrecy at all times (see paragraph 5(v) above). Where it cannot furnish samples of the deposited microorganism for any reason, it notifies the depositor of the fact, indicating the reason and informing him that he is entitled to make a new deposit (Article 4).

10. *Furnishing of samples.* The Regulations contain detailed provisions specifying who is entitled to receive samples of the microorganism, and when (Rule 11). The depositor himself is entitled to receive a sample at any time. He may authorize third parties to have samples furnished to them, whereupon the third parties receive a sample on presentation of their authorizations. Any industrial property office to which the Treaty applies may receive a sample on request if it needs the microorganism for the purposes of a patent procedure. Any other person may obtain a sample on request if an industrial property office to which the Treaty applies certifies that, under the applicable law, that person has a right to a sample of the microorganism concerned; the Regulations specify in detail the certification procedure. The use of a form (whose contents will be established by the Assembly and communicated by the International Bureau to all international depositary authorities) is mandatory for the request and certification. There is an alternative procedure wherey the industrial property office from time to time communicates to international depositary authorities lists of the accession numbers given to the deposit of the microorganisms referred to in the patents granted and published by it; the effect of this communication is to authorize those authorities to furnish samples of the microorganisms to anyone. It should be stressed that it follows from the foregoing that the international depositary never has to decide itself whether it has the right to furnish a sample since it only does so if it has the authorization of the depositor or of an industrial property office. The international depositary authority furnishes the sample in a container marked with the accession number given to the deposit and accompanied by a copy of the receipt for the deposit. It notifies the depositor of the furnishing of the sample.

11. *Communication of the scientific description and/or proposed taxonomic designation.* If the depositor has indicated a scientific description and/or proposed a taxonomic designation of the deposited microorganism, the international depositary authority must communicate it, on request, to any person entitled to receive a sample of the said microorganism (Rule 7.6).

12. *Fees.* For the procedure under the Treaty and the Regulations, the international depositary authority has the right to charge a fee in certain cases (specified in Rule 12.1). The two main fees are the fee for the storage of the microorganism (which is a single fee for the entire period of storage) and the fee for the furnishing of a sample (the furnishing of samples to industrial property offices is free of charge, however). The international depositary authority fixes the amounts of fees at its discretion, but they must not vary on account of the nationality or residence of the persons who have to pay them.

July 14, 1978. SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

[999 O.G. 2]

(74) Entry Into Force of the Budapest Treaty

The Patent and Trademark Office announces the entry into force on Aug. 19, 1980 of the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure with respect to the United States, Hungary, Bulgaria, France and Japan. A copy of the Treaty was published in the Official Gazette on Aug. 23, 1977 (961 O.G. 21–36).

Following entry into force of the Treaty, each State adhering or acceding thereto will be authorized to nominate depositories on its territory to serve as international depository authorities. Upon compliance with certain procedural steps set forth in the Treaty, each such depository will be designated an international depository authority.

No depository in the United States or elsewhere has yet been nominated or designated to serve as an international depository authority. It is expected, however, that some depositories will shortly be designated both in the United States and other States adhering to the Treaty. Public notice will be provided of the designation of each international depository authority and its requirements for patent deposits.

An application for a patent in any adhering States involving the action of a microorganism, for which a deposit is required, may make the required deposit in any international depository authority. The fact and date of making the deposit will be recognized for all patent purposes in each State adhering to the Treaty. No further deposit will be required for national patent processing or enforcement, provided a deposit is properly made under the provisions of the Treaty.

An application for a United States patent will not be required to proceed under the provisions of the Budapest Treaty, however. Such an applicant may rely instead on a deposit made in any depository meeting the requirements set forth in *In re Argoudelis et al.*, 168 USPQ 99 (CCPA, 1970) and reprinted in section 608.01(p), Manual of Patent Examining Procedure.

Questions or information regarding the Budapest Treaty may be directed to the Office of Legislation and International Affairs, at the following address: Box 4, Commissioner of Patents and Trademarks, Washington, D.C. 20231. The telephone number of the Office of Legislation and International Affairs is (703) 557–3065.

Date: July 14, 1980. SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Date: July 16, 1980. JORDAN J. BARUCH,
Assistant Secretary for Productivity, Technology and Innovation.

[997 O.G. 10]

(75) **Department of Commerce**

PATENT AND TRADEMARK OFFICE

37 CFR Part 1

FILE WRAPPER; CONTINUING APPLICATION PROCEDURE

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Proposed rulemaking.

SUMMARY: Patent and Trademark Office proposes amendment of the rules of practice in patent cases to provide an additional procedure for filing continuation and divisional applications. This procedure is being proposed to simplify filing and processing continuation and divisional patent applications by using the application and amendment papers filed in the abandoned parent application. The proposed procedure would eliminate many of the problems currently involved in preparing and processing new patent application papers in such applications.

DATES: Written comments by Feb. 4, 1981. Hearing, Feb. 4, 1981 beginning at 10:00 a.m.

ADDRESSES: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Building 3, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Va. Written comments and transcript of hearing will be available for public inspection in Room 11E10 of Building 3, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Va.

FOR FURTHER INFORMATION CONTACT: Mr. Louis O. Maassel by telephone at (703) 557-3070, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: The Patent and Trademark Office is considering amendments to the rules of practice in patent cases to permit an applicant for patent to file a continuation or divisional application by simply filing a special request, a new set of claims, and paying the statutory filing fee. The proposed procedure would simplify filing a continuation or divisional application in those cases where the parent application is to be abandoned. If the parent application will issue as a patent, a division or continuation thereof may continue to be filed under the provisions of 37 CFR 1.60. Under the proposal, a new serial number would be assigned to the continuing application, the parent application would be abandoned and, the specification, drawings, oath or declaration, and other papers in the file wrapper of the parent application would be used as the papers in the continuing application, along with the new set of claims. Only the payment of the filing fee, the filing of a special request containing an indication of a desire to continue prosecution and a new set of claims would be required to effect the filing of a continuation or divisional application. The procedure would be available for utility, design, plant, and reissue applications. Use of the proposed procedure will automatically result in abandonment of the parent application.

The proposed procedure could be used for either a continuation or divisional application provided that applicant wishes the parent case to become abandoned.

A continuation or divisional application is an application in which the disclosure is identical to an earlier application. However, the claims may be somewhat changed. Continuation applications are often filed in situations where the applicant feels that the issue of patentability has not been sufficiently developed before the examiner for an appeal from the final rejection to be filed with the Board of Appeals. Divisional applications are filed voluntarily or as a result of a requirement for restriction by the examiner in a prior application.

The filing of continuing applications is provided for in the patent statute at 35 U.S.C. 120. Divisional applications are provided for in 35 U.S.C. 121. Under these provisions of the patent law, a continuation or divisional application may be filed during the pendency of an earlier application and retain the benefi. of the filing date of the earlier parent application. Such benefit is valuable to the applicant if prior art becomes available or another inventor made the same invention during the pendency of the first application.

A simplified method of filing of such continuation or divisional applications is presently available under 37 CFR 1.60. Under § 1.60, the applicant may pay the filing fee and either supply or ask the Office to prepare the continuation or divisional application papers by making a copy of the original papers. Section 1.60 replaced earlier, more restrictive procedures under 37 CFR 1.147 and a procedure established by Commissioner's notice known as the "Streamline Continuation" program. The procedure under § 1.60 would remain in effect in its present form, if the proposed procedure were adopted since it allows a continuation or divisional application to be filed without abandonment of the parent application. The continuation or divisional application practice under § 1.60 has resulted in a number of problems. Often the original application does not permit the reproduction of good quality copy. Sometimes applicants prematurely abandon or fail to abandon the original application or otherwise do not understand the § 1.60 procedures. Correspondence relating to such problems has become burdensome to both the applicants and the Office. Under current § 1.60, the continuation or divisional application, in addition to being copied, must be completely processed as a new application through the Application Division, Microfilming Branch and Licensing and Review Division, as well as the Examining Group's new case docketing and amendment entry procedures. The prior application is sometimes difficult to locate because of the movement and placement of the application file wrapper after it leaves the Examining Group. The proposed procedure would not require such copies to be processed and filed and should therefore result in fewer problems and less work.

The proposed procedure is set forth in proposed § 1.62 and is in compliance with the requirements of 35 U.S.C. 111. The specification and drawings from the parent application are made available for use in the continuation or divisional application. A new filing fee is required in accordance with 35 U.S.C. 41(a). The only other statutory filing requirements are claims and a signed oath or declaration. A new copy of claims, beginning with "claim 1," would be required under the proposed procedure. Since a continuation or divisional application filed under proposed § 1.62 can not contain new matter, the oath or declaration filed in the parent case should supply all the information required under the statute and rules to obtain a filing date. Accordingly, the previously filed oath or declaration would be considered to be the oath or declaration of the § 1.62 continuation or division. If the claims submitted are broadened, a supplemental oath or declaration should be filed by the applicant in accordance with 37 CFR 1.67.

The original disclosure of an application filed under § 1.62 would be the original parent application as executed by the inventor(s). However, the filing fee would be based on the new copy of claims which must accompany the request and filing fee. The Certificate of Mailing Procedure under 37 CFR 1.8 would not apply to filing such a request since the filing of such a request is considered to be the filing of an application which is excluded under 37 CFR 1.8(a)(i).

Some of the anticipated benefits of the proposed procedures are the following: 1. Formality problems should be very small.

2. All current rules relating to after final rejection practice and filing of continuing applications would remain unchanged. The proposed filing procedure is an additional alternative which would be available to applicants to use at their option.

3. A more prompt first action in the continuation or divisional application should be received in view of the reduced processing time. The Application Division will process promptly all such applications. In the examining groups, such applications will be given high priority for processing purposes.

4. Amendments made to the specification and drawings of the parent application would carry over into the continuing application and would not need to be submitted again in the continuing application.

For the public: 1. The pendency of applications should be reduced since the time delay before examination and issuance of a continuing application filed under the proposed program would be reduced.

2. The entire record of prosecution would be in one file wrapper, even if several continuation applications were filed. This would result in easier access to a series of applications by the public if a patent is later issued.

For the Patent and Trademark Office: 1. The workload of reviewing and processing new application papers in the Application Division would be reduced.

2. The examining group clerks would not be required to again enter amendments made in the parent application.

3. Less storage space would be required since there would be fewer papers.

4. The parent file history and references cited therein would be readily available to the examiner and need not be ordered from abandoned files.

5. The Office would not be required to prepare a copy of the parent application file as under the current procedures under 37 CFR 1.60.

Proposed new § 1.62 outlines the requirements of the proposed procedure.

Section 1.138 is proposed to be amended so that a registered attorney or agent could, without being of record, file a § 1.60 or 1.62 application and expressly abandon the prior application. Such an action would not affect an applicant's rights since the prior application would only be expressly abandoned if a filing date is granted to a continuing application.

Notice is hereby given that, pursuant to the authority contained in section 6 of Title 35 of the United States Code, as amended, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending § 1.138 and by adding a new § 1.62. The Patent and Trademark Office has determined that these rule changes would have no potential major economic consequences requiring the preparation of a regulatory analysis under Executive Order 12044. In the text of rule 1.138 below, additions are shown by arrows and deletions are shown by brackets. It is proposed to amend Title 37 of the Code of Federal Regulations, Chapter I, Part 1, as follows: 1. By adding new § 1.62 to read as follows:

§ 1.62. *File wrapper continuation or division procedure.*

(a) A continuation or divisional application which discloses and claims only subject matter disclosed in a prior application may be filed before the payment of the issue fee, abandonment of, or termination of proceedings on the prior application by filing a request to use the specification, drawings, and oath of declaration from the prior application if the following four conditions are met: (1) The prior application is to be abandoned and not issued as a patent.

(2) A new set of claims to be prosecuted in the continuing application is submitted which begins with a new claim numbered "1."

(3) The filing fee under 35 U.S.C. 41(a) for the continuation or divisional application is paid during the pendency of the prior application. Such filing fee should be based on the number of claims submitted under the previous paragraph.

(4) Information is supplied as to the title, applicant, correspondence address, prior U.S. application, foreign priority application, number of pages of specification and sheets of drawings in the prior application.

(b) The filing of an application under § 1.62 will be construed to include a waiver of secrecy by the applicant under 35 U.S.C. 122 to the extent that any member of the public who is entitled under the provisions of 37 CFR 1.14 to access to, or information concerning, either the prior application, or any one of its continuation or divisional applications filed under the provisions of this section may be given similar access to, or information concerning, the other applications in the file wrapper.

(c) The filing of an application under § 1.62 will be considered to be a request to expressly abandon the parent application as of the filing date granted the continuation or divisional application filed under § 1.62.

2. By revising § 1.138 to read as follows:

§ 1.138 *Express abandonment.*

An application may be expressly abandoned by filing in the Patent and Trademark Office a written declaration of abandonment signed by the applicant himself and the assignee of record, if any, and identifying the application. Except as provided in § 1.262 an application may also be expressly abandoned by filing a written declaration of abandonment signed by the attorney or agent of record. ►A registered attorney or agent or agent acting under the provisions of § 1.34(a), or of record, may also expressly abandon a parent application as of the filing date granted to a continuing application by filing such a continuing application under the provisions of § 1.60 or § 1.62.◄ Express abandonment of the application may not be recognized by the Office unless it is actually received by appropriate officials in time to act thereon before the date of issue.

Dated: Oct. 17, 1980

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Approved:

Dated: Oct. 31, 1980.

JORDAN J. BARUCH,
Assistant Secretary for Productivity, Technology and Innovation.

[1001 O.G. 9]

MISCELLANEOUS

(76) Hearings Before the Board of Appeals

In recent years the backlog of cases awaiting decision by the Board of Appeals has grown substantially. The average time elapsing between filing of the examiner's answer and final disposition is now roughly 17 months. Intensive effort by the Board and greater use of acting examiners-in-chief have been successful in raising the number of dispositions, but at the same time the number of appeals continues to grow. Thus in the first six months of 1974, the Board disposed of 1,193 appeals but received 1,915; in the last half of the year the Board disposed of 1,993 appeals but received 2,179.

In this connection it will be helpful if applicants and attorneys will dispense with oral hearings except where unusual circumstances are present which make a hearing important to the decision. Appeals submitted on brief receive just as careful consideration as those in which oral argument is presented, nor are any implications drawn as to the merits of the appeal from failure to request a hearing. It has been the Board's experience that in the ordinary case the hearing is not of great value in arriving at the ultimate decision.

Appellants are also encouraged to review cases where a hearing has already been requested, with a view to withdrawing the request if it is not necessary. It is particularly important that the Board be given timely notice whenever circumstances prevent the applicant or his representative from appearing at a scheduled hearing.

Rule 194 (37 CFR 1.194) limits oral argument to thirty minutes unless otherwise ordered by the Board. It has been the Board's experience, however, that effective arguments can be presented in less than thirty minutes in most cases. Effective immediately the Board will be informing appellants in the notices of hearing mailed to them that oral argument will be limited to *twenty minutes* unless otherwise ordered before the hearing begins.

The assistance of the public will be appreciated.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Date: Mar. 20, 1975.

[933 O.G. 1010]

(77) Access to Interference Settlement Agreements by Government Agencies

Under the provisions of 35 U.S.C. § 135(c), a party to an interference filing a copy of a settlement agreement may request that the copy be kept separate from the file of the interference, and made available only to Government agencies on written request, or to any person on a showing of good cause.

In order to provide the parties with a record of the inspection of such agreements by Government agencies, a representative of an agency will henceforth be required to present a written request, similar to the following, for each interference in which the inspection and/or copying of the agreement(s) is desired:

Date: _____

To: Clerk, Board of Patent Interferences

Pursuant to the provisions of 35 USC 135(c), please permit _____ the bearer(s) of this letter, to [ ] inspect and/or [ ] copy the settlement agreement(s) filed in Interference No. _____. The information gained from such inspection and/or copying will be kept in confidence and will not be disclosed to any other person except for official investigative or law enforcement purposes.

_____
Name, Title

_____
Agency

The request will be placed in the folder containing the copy of the agreement, where it may be inspected by the parties or their authorized representatives.

This procedure will be applicable only to inspection or copying by the representatives of Government agencies, since no person other than a representative of a Government agency, or of a party, will be granted access to a copy of an interference settlement agreement which is kept separate from the interference file except by way of a petition for access thereto, see M.P.E.P. § 1002.02(k), item 2, and the parties to the interference are normally provided with copies of any such petition.

LUTRELLE F. PARKER,
Date: June 5, 1978. *Acting Commissioner of Patents and Trademarks.*

[972 O.G. 2]

(78) ACCESSIBILITY OF NON-FINAL DISCOVERY OPINIONS AND ORDERS ISSUED BY THE BOARD OF PATENT INTERFERENCES

A number of inquiries have been received from the patent bar and other interested persons relating to discovery practice under 37 C.F.R. § 1.287 before the Board of Patent Interferences. The inquiries indicate a need for making available to the public non-final Board opinions, including concurring and dissenting opinions, as well as orders, made in the adjudication of discovery matters before the Board. While non-final opinions need not be made available to the public [5 U.S.C. § 552(a)(2)], in order to satisfy the need, copies of non-final opinions issued by the Board will be kept in a file in the Service Branch of the Board in the U.S. Patent and Trademark Office (Crystal Plaza, Building 6, Eleventh Floor, Room 1116, Arlington, Virginia). Opinions in the file may be reviewed by the public during normal business hours (8:30 A.M. to 5:00 P.M.). Copies of opinions may be made by the public on reproducing equipment in the Service Branch with tokens at a cost of $0.15 per page or copies may be ordered at a cost of $0.30 per page [37 C.F.R. 1.21(b)].

In view of the provisions of 35 U.S.C. § 122 and 37 C.F.R. § 1.11(a), a consent will be obtained by the Office from all parties in an interference before an opinion issued in connection with the interference is placed in the file if the interference file is not otherwise available to the public. Preliminary indications are that the parties and their counsel generally consent.

In order to obtain optimum dissemination of the information contained in the file, opinions placed therein will be indexed according to specific topics. Copies of the index will be updated from time to time as the need occurs. Specific questions relating to the index and file may be directed to the Patent Interference Examiners.

The initial index is as follows:

Index

1.00 Discovery in general [37 C.F.R. § 1.287]
- 1.10 Requests and service under § 1.287(a)
- 1.20 Requests under § 1.287(b)
- 1.30 Motions for additional discovery under § 1.287(c)
  - 1.31 Related to derivation
  - 1.32 Related to abandonment, suppression, and concealment
  - 1.33 Related to inequitable conduct
  - 1.34 Other
- 1.40 Motions under § 1.287(d)(1)
- 1.50 Action under § 1.287(d)(2)
- 1.60 Agreements under § 1.287(e)

C. MARSHALL DANN,
Mar. 5, 1976. *Commissioner of Patents and Trademarks.*

[944 O.G. 2098]

(79) EXTENSIONS OF TIME AND FILING OF PAPERS IN INTERFERENCES

A recent sample of the interferences declared during fiscal years 1971–1975 has shown that since the 1950–1959 period there has been an increase of 27 days in the approximately one and one-half year pendency time of the average interference. This increase has occurred in spite of the Commissioner's notice of April 24, 1964, 802 O.G. 601, and an extensive revision of the interference rules in 1965.

While the failure to achieve any reduction in average interference pendency time may in part be attributable to the adoption in 1971 of 37 CFR 1.287(a)(2), which provides for the setting of additional time periods for purposes of discovery, it appears that a considerable reduction would result if the parties were to adhere to the times originally set by the Office, rather than seeking extensions of those times. Accordingly, stipulations or motions for extensions of time under 37 CFR 1.245 will not henceforth be approved or granted, respectively, unless accompanied by a detailed showing of facts sufficient to establish that the action for which the extension is sought could not have been or cannot be taken or completed during the time previously set therefor, and that the entire extension appears necessary for the taking or completion of that action. Since the Office favors the amicable settlement of interferences, the foregoing requirement will be liberally applied in the case of a first request for extension of time for the purpose of negotiating settlement.

Another factor which adversely affects the pendency time of the average interference is the number of papers filed. While parties are certainly entitled to exercise their rights in filing papers provided for by the rules, many papers are also filed that are not provided for by the rules, such as replies to replies to oppositions to motions under 37 CFR 1.231, and replies to oppositions to motions or petitions under 37 CFR 1.243 or 1.244. These unprovided-for papers appear to be generally unnecessary, cause a considerable increase in the size of the interference files, and delay determination of the motions or petitions to which they relate. Therefore, in the future papers filed in interference proceedings will be given no consideration unless they are specifically provided for by the rules. In this regard, particular attention is directed to 37 CFR 1.228, 1.231(b), 1.237, 1.243 and 1.244.

C. MARSHALL DANN,
Nov. 9, 1976. *Commissioner of Patents and Trademarks.*

[953 O.G. 2]

(80) **Petitions in Interference Cases From Decisions of The Board on Motions for Additional Discovery Under 37 CFR 1.287(c)**

Notwithstanding the clear statement in the last sentence of 37 CFR 1.287(c), parties in interference cases continue to seek review by the Commissioner of decisions of the Board of Patent Interferences on motions for additional discovery under 37 CFR 1.287(c). Review of such a decision can be had along with judicial review of a decision on the question of priority. *Cochran* v. *Kresock*, 530 F.2d 385, 188 USPQ 553 (CCPA 1976); *Comstock* v. *Kroekel*, 200 USPQ 548 (Comm'r. Pat. 1978). Accordingly, parties in interference cases are reminded that a petition to the Commissioner should not be filed for the purpose of seeking review of an interlocutory decision of the Board granting or denying a motion for additional discovery under 37 CFR 1.287(c). See also *Fenstermacher* v. *Daugherty*, 189 USPQ 536 (Comm'r. Pat. 1975) and *Sheehan* v. *Doyle*, 202 USPQ 783 (Comm'r. Pat. 1978). The filing of such a petition only serves to delay the ultimate disposition of interferences on the merits. The filing of a paper for the mere purpose of delay is not permitted by the rules. 37 CFR 1.346. The Board of Patent Interferences will no longer grant a stay of proceedings pending disposition of a petition to the Commissioner seeking review of a decision of the Board on a motion for additional discovery under 37 CFR 1.287(c).

SIDNEY A. DIAMOND,
Dated: Apr. 17, 1980. *Commissioner of Patents and Trademarks.*

[994 O.G. 28]

(81) **Petitions in Interference Cases to Strike Applications for Alleged Violations of 37 CFR § 1.56**

Not infrequently a party in an interference will file a petition requesting the Commissioner to enter an order under 37 CFR § 1.56(d) striking from the files a patent application involved in an interference. The issues raised by such a petition have been determined to be ancillary to priority within the meaning of 37 CFR § 1.258(a). See e.g., *Norton* v. *Curtiss*, 57 CCPA 1384, 433 F. 2d 779, 167 USPQ 532 (1970); *Langer* v. *Kaufman*, 59 CCPA 1261, 465 F. 2d 915,

175 USPQ 172 (1972). Hence, the issues may be considered by the Board of Patent Interferences at final hearing if properly and timely presented.

The normal disposition of a petition to strike an application involved in an interference is to dismiss the petition, without prejudice to renewal following termination of the interference. Such a disposition allows the parties to develop the issues before the Board of Patent Interferences. If the party filing the petition ultimately prevails in the interference, further action on the petition may be unnecessary. Should action on the petition be necessary, the Commissioner has the benefit of the view of the Board of Patent Interferences on the issues.

Under present practice, the Board of Patent Interferences generally will hold a petition to strike an application involved in an interference until the time for opposition has expired. The file is then forwarded to the Commissioner, where the petition is normally disposed of as indicated in the preceding paragraph. This practice is time consuming and needlessly delays the interference.

In order to prevent such delays, in the future the Patent Interference Examiner is authorized to enter an order dismissing a petition to strike an application involved in an interference, without prejudice to renewal of the petition after termination of the interference. The petition should be dismissed immediately upon receipt, without suspension of the interference.

Petitions to strike an application not involved in an interference will continue to be handled in the Office of the Assistant Commissioner for Patents in the manner previously announced.

Dated: Aug. 11, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

[998 O.G. 8]

(81.1)

Department of Commerce

PATENT AND TRADEMARK OFFICE

37 CFR Part 1

PATENT INTERFERENCE PROCEEDINGS

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Proposed rulemaking.

SUMMARY: The Patent and Trademark Office is proposing to amend five sections and to add one additional section to its rules of practice in patent cases. Each of these sections concerns patent interference proceedings. The purpose of this action is: (1) to clarify and more specifically define the matters which may be raised before the Board of Patent Interferences at final hearing; (2) to broaden the present requirements relating to printed briefs at final hearing; and (3) to specify the manner in which discovery may be used.

DATES: Written comments must be received on or before February 4, 1981.

ADDRESSES: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. All comments received will be available for public inspection in Room 11E10 of Building 3, Crystal Plaza, 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: Ian A. Calvert, Chairman, Board of Patent Interferences, by telephone at (703) 557-3625, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: The reasons for the proposed changes are set out in the following discussion, under three headings which correspond to the purposes stated in the "SUMMARY."

(1) *Matters raised at final hearing.*—The second sentence of present § 1.258(a) contains a lengthy statement concerning consideration of the patentability of a claim. This statement appears to be superfluous and has proven to be extremely confusing even to persons well versed in interference practice. Proposed § 1.258 eliminates this problem by concisely stating that at final hearing the Board of Patent Interferences will consider only priority of invention and matters ancillary thereto.

The other proposed changes in § 1.258 arose as a result of the decision on petition for rehearing in *Peska* v. *Satomura*, 602 F.2d 969, 202 USPQ 726 (CCPA 1979), in which the court noted that § 1.258(b) did not specify certain steps which the Patent and Trademark Office requires to have occurred in order for a motion under § 1.231(a)(4) to be considered at final hearing. In order to correct this deficiency, § 1.258(a) is proposed to be rewritten to specify how matters which are ancillary to priority must have been raised in order to entitle a party to raise them at final hearing. Under the proposed provisions, matters raised in § 1.231 motions which were dismissed as procedurally defective, for example, because they were filed belately, or did not comply with the first sentence of § 1.231(b), may not be raised before the Board of Patent Interferences. However, a matter raised in a motion which was dismissed solely because it was based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications (as provided in § 1.231(a)(1)), or because it would require the taking of testimony (*Cory* v. *Blakey*, 1905 C.D. 116 (Comr. Pats.)), may be raised at final hearing under proposed § 1.258(a)(1)(iii).

The language of proposed § 1.258(a)(2) is taken from present § 1.225(a).

Present paragraph (b) of § 1.258 has been eliminated as redundant, since the question of benefit of a prior application is ancillary to priority, and is therefore covered under paragraph (a). Paragraph (c) of § 1.258 remains unchanged.

In view of the proposed revision of § 1.258, § 1.225(a) is proposed to be considerably simplified by merely referring to § 1.258. The provision for requesting final hearing within 30 days of the decision denying the motion has been dropped as superfluous, since the time for requesting final hearing, if appropriate, is always set by the patent interference examiner. A final sentence requiring a motion to take testimony is proposed to be added, in order to ensure that if a matter (ancillary to priority) raised in a § 1.231 motion is one which must be supported by evidence, the testimony or other evidence (e.g., under 37 CFR 1.282) necessary for consideration of the matter by the Board of Patent Interferences will be taken inter partes, in accordance with 37 CFR 1.271 et seq.

Minor changes are proposed in § 1.231(d) for the purpose of consistency with proposed § 1.258.

None of the proposed changes in §§ 1.225(a), 1.231(d) or 1.258 is intended to alter the existing practice, except for the last sentence of proposed § 1.225(a), which makes mandatory a step which good practice dictates should be taken under present procedure but often is not.

(2) *Printed briefs.*—Under present §§ 1.253 and 1.254, testimony and briefs for final hearing filed in interferences must, if printed, comply with the requirements of § 1.253(e), which have consistently been interpreted as requiring standard typographic printing. Since the Court of Customs and Patent Appeals accepts as "printed" briefs produced by other processes, it is considered that the Patent and Trademark Office should follow suit, in order to spare interference parties the present onerous cost of typographic printing. § 1.253(e) is therefore proposed to be amended to conform it more closely to Rule 5.8(a) of the Court of Customs and Patent Appeals. A sentence, based on Court of Customs and Patent Appeals Rule 5.8(e), is proposed to be added to § 1.254 in order to permit the Board of Patent Interferences to accept, in its discretion, a brief which may not literally comply with the rules, but is otherwise considered satisfactory.

(3) *Use of discovery.*—When § 1.287 was adopted in 1971, no particular provision was made in the rules for the introduction and use as evidence of items obtained through discovery. This has led to some disagreement and confusion on the subject. Compare, for example, the majority and concurring opinions in *Inoue* v. *Lobur*, 195 USPQ 256 (Bd. Pat. Int. 1976).

Proposed new § 1.288 is intended to remedy this situation. Paragraph (a) of the rule is analogous to § 1.282, and permits a party to an interference who has obtained, through discovery related to the interference, admissions in writing in response to written requests for admissions, or written answers to written interrogatories, to introduce the admissions or answers into evidence without taking testimony. The term "discovery" is intended to include discovery conducted voluntarily between the parties or in a court, as well as discovery under § 1.287.

Paragraph (b) of the proposed section specifies that other matter obtained by discovery must be introduced in the same manner as other evidence; for example, documents obtained by discovery must be introduced as indicated in *Clark* v. *Wilke*, 203 USPQ 1101 (Bd. Pat. Int. 1978), and testimony taken in an ancillary proceeding under the control of a U.S. District Court must be introduced in accordance with § 1.283 (Commissioner's Notice of May 2, 1972, 898 O.G. 1500).

Pursuant to 35 USC 6(a), as amended, the Commissioner of Patents and Trademarks proposed to amend Title 37 of the Code of Federal Regulations by amending the §§ 1.225, 1.231, 1.253, 1.254 and 1.258, and by adding a new § 1.288, as shown below. The Patent and Trademark Office has determined that these rule changes have no potential major economic consequences requiring the preparation of a regulatory analysis under Executive Order 12044.

It is proposed to amend 37 CFR, Chapter I, Subchapter A, Part 1, as follows:

1. By revising paragraph (a) of § 1.225 to read as follows:

§ 1.225 ***Failure of junior party to file statements or to overcome filing date of senior party.***

(a) If a junior party to an interference fails to file a preliminary statement, or if his statement fails to overcome the effective filing date of another party, judgment on the record will be entered against that junior party unless:

(1) Under the provisions of § 1.258(a), he would be entitled to raise before the Board of Patent Interferences a matter which is ancillary to priority and which, if decided in his favor, would remove the basis for judgment on the record against him, and

(2) Within a time set by the patent interference examiner, not less than 30 days, he requests that final hearing be set to review such matter. If the matter was raised in a motion which was dismissed for one of the reasons specified in § 1.258(a)(1)(iii), the request for final hearing must be accompanied by a motion to take testimony under paragraph (b) of this section.

• • • • •

2. By amending paragraph (d) of § 1.231 as follows (additions are indicated by arrows, deletions by brackets):

§ 1.231 ***Motions before the primary examiner.***

• • • • •

(d) All proper motions as specified in paragraph (a) of this section, or of a similar character, will be transmitted to and considered by the primary examiner without oral argument, except that consideration of a motion to dissolve ►on a ground other than no interference in fact◄ will be deferred to final hearing before a Board of Patent Interferences where the motion [urges unpatentability of a count to one or more parties] ►raises a matter◄ which would be reviewable at final hearing under § 1.258(a) and such [unpatentability is urged] ►matter is raised◄ against a patentee or has been ruled upon by the Board of Appeals or by a court in ex parte proceedings. Also consideration of a motion to add or remove the names of one or more inventors may be deferred to final hearing if such motion is filed after the times for taking testimony have been set. Request for reconsideration will not be entertained.

3. By revising paragraph (e) of § 1.253 to read as follows:

§ 1.253 ***Copies of the testimony.***

• • • • •

(e) When the copies of the testimony are submitted in printed form, they may be produced by standard typographic printing or by any process capable of producing a clear black permanent image. All printed matter except on covers must appear in at least 11 point type on opaque, unglazed paper. Margins must be justified. Footnotes may not be printed in type smaller than 9 point. The page size shall be either 7⅝ by 10¼ inches (19.4 by 26 cm.) with type matter 4⅛ by 7⅛ inches (10.6 by 18.2 cm.), or 8½ by 11 inches (21.6 by 27.9 cm.) with type matter 6½ by 9½ inches (16.5 by 24.1 cm.). The testimony shall be bound to lie flat when open. Plastic and metal ring-type bindings are not acceptable. Twenty-five additional copies for the United States Court of Customs and Patent Appeals, should appeal be taken, may also be filed; if no appeal be taken, the twenty-five copies will be returned to the party filing the testimony.

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4. By adding the following sentence to § 1.254:

§ 1.254 ***Briefs at final hearing.***

• • • The board may refuse to accept any brief which has been printed, typewritten, or bound otherwise than in substantial conformity with this section.

5. By revising § 1.258 to read as follows:

§ 1.258 ***Matters considered in determining priority.***

(a) In determining priority of invention, the Board of Patent Interferences will consider only priority of invention on the evidence submitted, and matters ancillary thereto. A party shall be entitled to raise a matter which is ancillary to priority only if:

(1) The matter was raised by the party in a motion under § 1.231(a), and:

(i) The motion was transmitted to and decided by the primary examiner; or

(ii) Consideration of the motion was deferred to final hearing; or

(iii) The motion was dismissed as being based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications, or as being based on a ground which would require the taking of testimony; or

(2) The matter was raised by the party in opposition to a motion under § 1.231(a)(2), (3), (4) or (5) which was granted over his opposition; or

(3) The party shows good reason why the matter was not raised as specified in paragraphs (a)(1) or (2) of this section.

(b) To prevent manifest injustice the Board of Patent Interferences may in its discretion consider a matter which is ancillary to priority even though it would not otherwise be entitled to consideration under paragraph (a) of this section.

(c) At final hearing between an application and a patent the prior art of record in the patent file may be referred to for the purpose of construing the issue.

6. By adding the following new section:

§ 1.288 ***Use of discovery.***

(a) If a party intends to rely upon an admission or upon an answer to an interrogatory, obtained by discovery, the admission or answer may be introduced into evidence by filing, before the closing of the time for taking the testimony of the party (before the time for taking the testimony in chief if such admission or answer is not in rebuttal), a copy of the admission and the request therefor and/or a copy of the interrogatory and its answer, together with a notice of reliance thereon.

(b) A party may not rely upon any other matter obtained by discovery unless it is introduced into evidence pursuant to §§ 1.271 to 1.286.

SIDNEY A. DIAMOND,
Dated: Oct. 15, 1980 *Commissioner of Patents and Trademarks*

Approved:

JORDAN J. BARUCH,
Dated: Oct. 31, 1980 *Assistant Secretary for Productivity, Technology and Innovation*

[FR Doc. 80-36675 Filed 11-24-80; 8:45 am]

[1001 O.G. 30]

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(82) DISCLOSURE DOCUMENT PROGRAM

This notice consolidates and supersedes the notices of Mar. 26, 1969 (862 O.G. 1) and Aug. 11, 1970 (878 O.G. 1) relating to the Patent Office Disclosure Document Program.

Under this program the Patent Office accepts and preserves, for a period of two years, papers referred to as "Disclosure Documents." These papers may be used as evidence of the dates of conception of inventions.

THE PROGRAM

A paper disclosing an invention and signed by the inventor or inventors may be forwarded to the Patent Office by the inventor (or by any one of the inventors when there are joint inventors), by the owner of the invention, or by the attorney or agent of the inventor(s) or owner. It will be retained for two years and then be destroyed unless it is referred to in a separate letter in a related patent application within said two years.

A Disclosure Document is not a patent application and the date of its receipt in the Patent Office will not become the effective filing date of any patent application subsequently filed. However, like patent applications, these documents will be kept in confidence by the Patent Office. If patent protection is desired, a patent application should be filed as soon as possible.

This program does not diminish the value of conventional witnessed and notarized records as evidence of conception

of an invention, but it should provide a more credible form of evidence than that provided by the popular practice of mailing a disclosure to oneself or another person by registered mail. The program is made available as a service to those persons desiring to use it.

CONTENT OF DISCLOSURE DOCUMENT

Although there are no restrictions as to content and claims are not necessary, the benefits afforded by a Disclosure Document will depend directly upon the adequacy of the disclosure. Therefore, it is strongly urged that the document contain a clear and complete explanation of the manner and process of making and using the invention in sufficient detail to enable a person having ordinary knowledge in the field of the invention to make and use the invention. When the nature of the invention permits, a drawing or sketch should be included. The use or utility of the invention should be described, especially in chemical inventions.

The Disclosure Document must be limited to written matter or drawings on paper or other thin, flexible material, such as linen or plastic drafting material, having dimensions or being folded to dimensions not to exceed 8½ by 13 inches. Photographs also are acceptable. Each page should be numbered. Text and drawings should be sufficiently dark to permit reproduction with commonly used office copying machines.

A $10 fee is charged for filing a Disclosure Document. Payment must accompany the Disclosure Document when it is submitted to the Patent Office.

In addition to the $10 fee, the Disclosure Document must be accompanied by a stamped, self-addressed envelope and a separate paper in duplicate, signed by the inventor, stating that he is the inventor and requesting that the material be received for processing under the Disclosure Document Program. The papers will be stamped by the Patent Office with an identifying number and date of receipt, and the duplicate request will be returned in the self-addressed envelope together with a warning notice indicating that the Disclosure Document may be relied upon only as evidence and that a patent application should be diligently filed if patent protection is desired. The inventor's request may take the following form:

"The undersigned, being the inventor of the disclosed invention, requests that the enclosed papers be accepted under the Disclosure Document Program, and that they be preserved for a period of two years."

RETENTION

The Disclosure Document will be preserved in the Patent Office for two years after its receipt and will then be destroyed unless it is referred to in a separate letter in a related patent application filed within the two-year period. The Disclosure Document must be referred to in the separate letter by title, number, and date of receipt. Acknowledgment of receipt of such letters will be made in the next official communication or in separate letter from the Patent Office. Unless it is desired to have the Patent Office retain the Disclosure Document beyond the two-year period, it is not required that it be referred to in a patent application.

WARNING AS TO LIMITATIONS

The two-year retention period should not be considered to be a "grace period" during which the inventor can wait to file his patent application without possible loss of benefits. It should be recognized that in establishing priority of invention an affidavit or testimony referring to a Disclosure Document must usually also establish diligence in completing the invention or in filing the patent application since the filing of the Disclosure Document.

Inventors are also reminded that any public use or sale in the United States, or publication of the invention anywhere in the world, more than one year prior to the filing of a patent application on that invention will prohibit the granting of a patent on that invention.

If the inventor is not familiar with what is considered to be "diligence in completing the invention" or "reduction to practice" under the patent law, or if he has other questions about patent matters, the Patent Office advises him to consult an attorney or agent registered to practice before the Patent Office. Patent attorneys and agents may be found in the telephone directories of most major cities. Also, many large cities have associations of patent attorneys which may be consulted.

RICHARD A. WAHL,
Jan. 4, 1971. *Assistant Commissioner of Patents.*

[883 O.G. 3]

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(83) SUSPENSION OF ACTION *UNDER* 37 CFR 1.103 AND UNDER 37 CFR 1.212

The purpose of this notice is to clarify existing Office practice with respect to suspension of action.

"Suspension of action" under 37 CFR 1.103 applies only to the situation where action is to be taken *by the Examiner*. In other words, action cannot be suspended in an application which contains an outstanding Office action awaiting response by the applicant.

Under 37 CFR 1.212, upon declaration of an interference, ex parte prosecution of an application is suspended and any outstanding Office actions are considered as withdrawn by operation of the rule. *Ex parte Peterson*, 49 USPQ 119 (Commissioner of Patents, 1941). Upon termination of the interference, the Examiner will reinstate the action treated as withdrawn by operation of 37 CFR 1.212 and set a statutory period for response. The formats set forth in MPEP 1109.01 and MPEP 1109.02 may be followed.

Careful adherence to the distinction set forth above will prevent any question of abandonment from arising in connection with cases in which suspension of prosecution has occurred.

WILLIAM FELDMAN,
Deputy Assistant Commissioner for Patents.

Mar. 7, 1978.

[969 O.G. 8]

(84) POSTAL SERVICE EMERGENCY CONTINGENCY PLAN

The U.S. Patent and Trademark Office is establishing the following contingency plan for filing any paper or paying any fee in the Office in the event of an emergency caused by any major interruption in the mail service in the United States. Upon determination by the Commissioner of Patents and Trademarks that such an emergency exists, a notice activating the plan will be issued by the Commissioner. The activating notice will be published in the Wall Street Journal and made available in a special recorded telephone message at area code 703, 557–3158. Also, certain publications, patent bar groups, and other organizations closely associated with the patent system, will be notified. Termination of the program will be similarly announced. Where the postal emergency is not nationwide, the Commissioner will designate the areas of the United States in which the procedures outlined below will be in effect.

U.S. Department of Commerce District Offices (formerly referred to as Department of Commerce Field Offices) will be designated on an emergency basis, as receiving stations for filing papers and paying fees in the U.S. Patent and Trademark Office.

Upon determination that an emergency exists, the following procedures may be followed: All papers and fees should be enclosed in a sealed envelope addressed to the Patent and Trademark Office and deposited in one of the District Offices. Such papers will be considered as received in the U.S. Patent and Trademark Office on the day of deposit. The District Office will date stamp each envelope and the accompanying receipt card which completely identifies the deposited papers. The receipt card will be returned to the depositor. Applicants or their representatives should assure the legibility of the date stamp.

District Office deposits should be limited to checks in payment of issue fees, new application papers wherein priority dates or statutory bars may be involved, amendments where the six month statutory period for response is about to expire, trademark oppositions, Section 8 affidavits, trademark renewals, and to other papers for which the patent and trademark statutes do not provide a remedy for failure to obtain a particular date.

Where papers originate from overseas, it is suggested that the papers be mailed to a registered agent in Canada, with a

POSTAL SERVICE EMERGENCY CONTINGENCY PLAN

request that the papers be forwarded by courier to the nearest District Office in the United States.

In regard to pending applications, if the time for taking any action or paying any fee expires during the period that the Commissioner declares to be an emergency, the time will be extended until one month after the end of the emergency period, provided that such extension does not exceed the maximum period for response provided for in the statutes.

Since this extension of time will be automatic, there will be no record in the individual files to indicate that a response filed during the extended period is in fact timely. In order to provide a complete record, applicants or their representatives should file a paper referring to this notice in each case in which a response is filed during the extended period.

The addresses of the Department of Commerce District Offices, subject to subsequent changes, are as follows:

ALBUQUERQUE, N.M., 87101, Room 316, U.S. Courthouse (505) 766–2386.

ANCHORAGE, 99501, 632 Sixth Ave., Hill Bldg., Suite 412 (907) 265–4597.

ATLANTA, 30309, Suite 523, 1401 Peachtree St., NE. (404) 526–6000.

BALTIMORE, 21202, 415 U.S. Customhouse, Gay and Lombard Sts. (301) 962–3560.

BIRMINGHAM, ALA., 35205, Suite 200–201, 908 S. 20th St. (205) 325–3327.

BOSTON, 02116, 10th Floor, 441 Stuart St. (617) 223–2312.

BUFFALO, N.Y., 14202, Room 1312, Federal Bldg., 111 W. Huron St. (716) 842–3208.

CHARLESTON, W. VA., 25301, 3000 New Federal Office Bldg., 500 Quarrier St. (304) 343–6181, Ext. 375.

CHEYENNE, WYO., 82001, 6022 O'Mahoney Federal Center, 2120 Capitol Ave. (307) 778–2151.

CHICAGO, 60603, Room 1406, Mid-Continental Plaza Bldg., 55 E. Monroe St. (312) 353–4450.

CINCINNATI, 45202, 8028 Federal Office Bldg., 550 Main St. (513) 684–2944.

CLEVELAND, 44114, Room 600, 666 Euclid Ave. (216) 522–4750.

COLUMBIA, S.C., 29204, Forest Center, 2611 Forest Dr. (803) 765–5345.

DALLAS, 75202, Room 3E7, 1100 Commerce St. (214) 749–1515.

DENVER, 80202, Room 161, New Custom House, 19th and Stout Sts. (303) 837–3246.

DES MOINES, IOWA, 50309, 609 Federal Bldg., 210 Walnut St. (515) 284–4222.

DETROIT, 48226, 445 Federal Bldg. (313) 226–3650.

GREENSBORO, N.C., 27402, 203 Federal Bldg., W. Market St., P.O. Box 1950. (919) 275–9111, Ext. 345.

HARTFORD, CONN. 06103, Room 610–B, Federal Office Bldg., 450 Main St. (203) 244–3530.

HONOLULU, 96813, 286 Alexander Young Bldg., 1015 Bishop St. (808) 546–8694.

HOUSTON, 77002, 201 Fannin, 1017 Federal Office Bldg. (713) 226–4231.

INDIANAPOLIS, 46204, 355 Federal Office Bldg., 46 E. Ohio St. (317) 269–6214.

KANSAS CITY, MO., 64106, Room 1840, 601 E. 12th St. (816) 374–3142.

LOS ANGELES, 90024, 11201 Federal Bldg., 11000 Wilshire Blvd. (213) 824–7591.

MEMPHIS, 38103, Room 710, 147 Jefferson Ave. (901) 534–3213.

MIAMI, 33130, Rm. 821, City National Bank Bldg., 25 W. Flagler St. (305) 350–5267.

MILWAUKEE, 53203, Straus Bldg., 238 W. Wisconsin Ave. (414) 224–3473.

MINNEAPOLIS, 55401, 306 Federal Bldg., 110 S. Fourth St. (612) 725–2133.

NEW ORLEANS, 70130, Room 432, International Trade Mart, 2 Canal St. (504) 589–6546.

NEW YORK, 10007, 41st Floor, Federal Office Bldg., 26 Federal Plaza, Foley Sq. (212) 264–0634.

NEWARK, N.J., 07102, Gateway Bldg., (4th floor) (201) 645–6214.

PHILADELPHIA, 19106, 9448 Federal Bldg., 600 Arch St. (215) 597–2850.

PHOENIX, ARIZ., 85004, 508 Greater Arizona Savings Bldg., 112 N. Central Ave. (602) 261–3285.

PITTSBURGH, 15222, 431 Federal Bldg., 1000 Liberty Ave. (412) 644–2850.

PORTLAND, ORE., 97205, 921 SW. Washington St., Suite 521, Pittock Block. (503) 221–3001.

RENO, NEV., 89502, 2028 Federal Bldg., 300 Booth St. (702) 784–5203.

RICHMOND, VA., 23240, 8010 Federal Bldg., 400 N. 8th St. (804) 782–2246.

ST. LOUIS, 63105, Chromalloy Bldg., 120 S. Central Ave. (314) 622–4243.

SALT LAKE CITY, 84111, 1201 Federal Bldg., 125 S. State St. (801) 524–5116.

SAN FRANCISCO, 94102, Federal Bldg., Box 36013, 450 Golden Gate Ave., (415) 556–5860.

SAN JUAN, P.R., 00902, Room 100, Post Office Bldg. (809) 723–4640.

SAVANNAH, 31402, 235 U.S. Courthouse and Post Office Bldg., 125–29 Bull St. (912) 232–4204.

SEATTLE, 98109, 706 Lake Union Bldg., 1700 Westlake Ave. North (206) 442–5615.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

July 18, 1975.

[937 O.G. 386]

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(85)

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patent may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries—Continued

Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Minnesota	Minneapolis Public Library & Information Center	(612) 372–6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862–1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255–7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448–1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 12 o'clock noon and 5 :00 p.m.

[999 O.G. 27]

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(86) EXAMINER TESTIMONY

As stated in Section 1701 of the Manual of Patent Examining Procedure, patent examiners are forbidden to testify as patent experts or to express opinions, in testimony or otherwise, as to the invalidity of any issued patent. Patent examiners have, in connection with litigation involving patent validity, been called to testify on factual matters. In those cases, the practice has been to permit the examiner to testify only upon the issuance of a subpoena.

Henceforth, patent examiners will be permitted to testify on deposition in patent suits, without the need for a subpoena, provided the following conditions are satisfied:

1. The party proposing to take the testimony will state in writing, that the questions to be asked of the examiner will be phrased to comply with the permissible scope of inquiry as outlined in the protective orders contained in the Court opinions in *In re Mayewsky*, 162 USPQ 86, 89 and *Shaffer Tool Works* v. *Joy Manufacturing Co.*, 167 USPQ 170, 171: " . . . the scope of the oral depositions of the patent examiners is hereby limited to matters of fact and must not go into hypothetical or speculative areas or the bases, reasons, mental processes, analyses, or conclusions of the patent examiners in acting upon the patent applications maturing into the patent [in suit]." 167 USPQ 171.
2. That in addition to complying with the requirements of Rule 30 of the Federal Rules of Civil Procedure, the party taking the testimony will agree to give notice of the taking of the deposition of the patent examiner to the Solicitor, at least thirty days prior to the date on which the taking of the deposition is desired.
3. That the party taking the deposition arrange with the Solicitor to notice the deposition at a place convenient to the Patent Office.

If the party desiring to take the testimony of the examiner does not agree to the conditions enumerated, the Patent Office will not permit the examiner to be deposed without a subpoena and compliance with the procedure set forth in Section 7.02, Department of Commerce Administrative Order 205–12, June 29, 1967 as amended April 10, 1970. That section states:

> In any case where it is sought by subpoena, order or other compulsory process or other demand of a court or other authority (hereinafter referred to as a "demand") to require the production or disclosure of any record in the files of the Department of Commerce or other information acquired by an officer or employee of the Department as a part of the performance of his official duties or because of his official status, the matter shall be immediately referred for determination to the appropriate official described in subsection 4.01 of this order. If such official has discretion with respect to disclosure and he determines that it would be improper to comply with the demand, or if he has no discretion with respect to disclosure, the matter shall be promptly referred to the Secretary of Commerce for final determination. Unless and until the Secretary determines that the records or information should be produced, the officer or employee who appears in answer to the demand shall inform the court or other authority (a) that the section 7 of this order prohibits the officer or employee from producing or disclosing the records or other information demanded without the prior approval of the Secretary of Commerce, and (b) that the demand has been, or is being, as the case may be, referred for the prompt consideration of the Secretary. The officer or employee shall also provide the court or other authority with a copy of the regulations prescribed in this section 7 of this order, and shall respectfully request the court or other authority to stay the demand pending the receipt of instructions or directions from the Secretary of Commerce concerning the demand.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Mar. 13, 1972.

[897 O.G. 762]

(87) Report on Results of a July, 1979 Survey on the Citation by Applicants of Prior Art in Patent Applications

This report summarizes the data compiled from a sample of 900 allowed applications surveyed in the Office of Patent Program Control during the week of July 16 to July 19, 1979.

All applications in this survey were filed on or after July 1, 1977, the effective date of the establishment of new rules 37 CFR 1.97–1.99 relating to the citation of prior art by applicants.

For the purposes of the survey, a "citation", whether appearing in the specification or in a separate paper, is defined as (1) a listing of patents or publications together *with* a concise explanation of the relevance of each listed item (i.e. a prior art "statement" under 37 CFR 1.98 (a)) or (2) a "mere listing" of patents or publications. In addition, a "reference" is defined as any patent or other publication cited by applicant.

This survey is similar to and presented in the same general format as the surveys published in the OFFICIAL GAZETTE of November 23, 1976, pages 1356 and 1357 and of September 26, 1978, pages 22 and 23.

This survey indicates, among other things, that 63% of the sampled applications include citations by applicants. This is generally consistent with the 64% finding in the 1978 survey and, like the 1978 survey, represents an improvement over the 54% finding in the 1976 survey.

The statistics are otherwise presented without comment as follows:

	Chem.	Elec.	Mech.	Total
(1) Number of applications in sample	300	300	300	900
(Percent of total)	33	33	33	100
Number of applications having citations submitted in:				
(2) Separate papers only	83	60	71	214
(Percent of sample 2/1)	28	20	24	24
(3) Both separate papers *and* in specification	10	14	9	33
(Percent of sample 3/1)	3	5	3	4
(4) The specification only	85	109	125	319
(Percent of sample 4/1)	28	36	42	35
(5) Total number of applications having citations	178	183	205	566
(Percent of sample 5/1)	59	61	68	63

Applications in which the applicant submitted citations in the *specification*.

	Chem.	Elec.	Mech.	Total
(6) Number of applications including citations in the specification	95	123	134	352
(Percent of applications having citations 6/1)	32	41	45	39
(7) Number of applications including mere listing of references in the specification	9	9	4	22
(Percent of applications having mere listing of references 7/1)	3	3	1	2
(8) Number of applications including prior art statements in the specification	86	114	130	330
(Percent of applications having prior art statements 8/1)	29	38	43	37
(9) Number of applications including prior art statements in the specification which included copies of the references	26	35	29	90
(Percent of applications, with statements, having copies of references 9/8)	30	31	22	27
(10) Number of applications having prior art statements in the specification which comply fully with the guidelines (37 CFR 1.97–1.99; MPEP § 609) (e.g. timely filed, translations where applicable, etc.)	28	30	25	83
(Percent of applications, with statements, in accordance with CFR and MPEP 10/8)	33	26	19	25
(11) Number of applications having prior art statements citing non-English documents in specification	23	20	19	62
(Percent of applications, with statements, citing non-English documents 11/8)	27	18	15	19

Applications in which the applicant submitted citations in the *specification*.

	Chem.	Elec.	Mech.	Total
(12) Number of applications having prior art statements citing non-English documents in specification which included an English translation or English equivalent document	4	5	3	12
(Percent of applications, with statements, having translations of non-English documents 12/11)	17	25	16	19

Applications in which applicant submitted citations in *separate papers*.

	Chem.	Elec.	Mech.	Total
(13) Number of applications having citations in a separate paper	93	74	80	247
(Percent of applications having citations in separate papers 13/1)	31	25	27	27
(14) Number of separate papers having citations. (Note that 253 papers were filed in 247 applications. Of 247 applications, 241 had one paper and 6 applications had two papers)	95	77	81	253
(15) Number of separate papers having citations submitted within 3 months of the filing date of the application	68	47	61	176
(Percent of separate papers having citations submitted within 3 months 15/14)	72	61	75	70
Number of separate papers having citations filed later than 3 months after the filing date and after the first Office action which:				
(16) Included a statement explaining why the prior art was not earlier presented	2	3	3	8
(Percent of separate papers having citations including explanations for late filing 16/14)	2	4	4	3
(17) *Did not include* a statement explaining why the prior art was not earlier presented	25	27	17	69
(Percent of separate papers having citations not including explanation for late filing 17/14)	26	35	21	27
(18) Number of separate papers having citations which included a copy(s) of the reference(s)	72	56	62	190
(Percent of separate papers having citations including copy(s) of the reference(s) 18/14)	76	73	77	75
(19) Number of separate papers having citations which included a non-English document citation	20	10	22	52
(Percent of separate papers having citations citing non-English documents 19/14)	21	13	27	21
(20) Number of separate papers having citations which included an English translation or English language equivalent of a non-English document	13	3	8	24
(Percent of separate papers having translation etc., of non-English documents 20/19)	65	30	36	46
(21) Number of separate papers having prior art statements	88	51	62	201
(Percent of separate papers having prior art statements 21/14)	93	66	77	79
(22) Number of separate papers having citations which fully conformed with the guidelines (37 CFR 1.97–1.99; MPEP § 609)	56	30	37	123
(Percent of separate papers fully conforming with CFR and MPEP 22/14)	59	39	46	49

Applications (With Statements in Specification) Grouped Below According to Numbers of References Cited.

	Chem.	Elec.	Mech.	Total
(23) Numbers of applications including statements in the specification having a range of 1–5 references	66	98	108	272
(Percent of applications having statements in specification with 1–5 references 23/8)	77	86	83	82
(24) Number of applications including statements in the specification having a range of 6–10 references	15	10	20	45
(Percent of applications having prior art statements in specification with 6–10 references 24/8)	17	9	15	14
(25) Number of applications including statements in the specification having more than 10 references	5	6	2	13
(Percent of applications having statements in specification with 10 or more references 25/8)	6	5	2	4

Separate Papers (With Statements) Grouped Below According to Numbers of References Cited.

	Chem.	Elec.	Mech.	Total
(26) Number of separate papers including statements having a range of 1–5 references	47	28	34	109
(Percent of separate papers with 1–5 references 26/21)	53	55	55	54
(27) Number of separate papers including statements having a range of 6–10 references	20	14	19	53
(Percent of separate papers with 6–10 references 27/21)	23	27	31	26
(28) Number of separate papers including statements having more than 10 references	21	9	9	39
(Percent of separate papers with 10 or more references 28/21)	24	18	14	20

Applications (With Mere Listings of References in Specification and Separate Papers) Grouped Below According to Number of References Cited.

	Chem.	Elec.	Mech.	Total
(29) Number of applications having a range of 1–5 references	7	18	9	34
(Percent of applications having listings of 1–5 references 29/29+30+31)	47	55	39	48
(30) Number of applications having a range of 6–10 references	6	10	4	20
(Percent of applications having listings of 6–10 references 30/29+30+31)	40	30	17	28
(31) Number of applications having more than 10 references	2	5	10	17
(Percent of applications having listings of 10 or more references 31/29+30+31)	13	15	44	24

July 14, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

[997 O.G. 8]

(88) **Department of Commerce**

PATENT AND TRADEMARK OFFICE

37 CFR Part 5

SECRECY OF CERTAIN INVENTIONS AND LICENSES TO FILE APPLICATIONS IN FOREIGN COUNTRIES; EXPORTS OF TECHNICAL DATA

AGENCY: Patent and Trademark Office, Commerce.
ACTION: Final rule.

SUMMARY: This amendment of the rules of practice brings them into agreement with changes which the Office of Export Administration of the International Trade Administration, Department of Commerce, has made in its Export Administration Regulations. The Office of Export Administration has amended these regulations by adding the filing of patent applications in foreign countries to the list of exports which are not controlled by the Office of Export Administration. As amended, these regulations point out that exports of unclassified technical data in the form of patent applications, amendments and the like are governed by regulations issued by the Patent and Trademark Office. These changes in the Export Administration Regulations are intended to be reflected in this amendment of the Patent and Trademark Office's rules of practice.

EFFECTIVE DATE: November 3, 1980.

FOR FURTHER INFORMATION CONTACT: Mr. Samuel Engle by telephone at (703) 557–2897 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: On July 30, 1980, the International Trade Administration of the Department of Commerce published in the Federal Register (45 FR 50556) its amendment of 15 CFR Parts 370 and 379. These amendments added the filing of patent applications in foreign countries to the list of exports which are not controlled by the Office of Export Administration. They point out that no validated export license from the Office of Export Administration is required for data contained in a patent application, or an amendment, modification, supplement or division thereof for filing in a foreign country in accordance with the regulations of the Patent and Trademark Office in 37 CFR Part 5. Section 5.19 of 37 CFR Part 5 is therefore being revised to delete the now-obsolete requirement for a validated export license and make clear that such a license is not required if the filing of a patent application in a foreign country is in accordance with Patent and Trademark Office regulations, 37 CFR 5.11–5.23.

This amendment of 37 CFR Part 5 has been reviewed pursuant to Executive Order 12044 and found to have no major economic consequences and therefore does not require a regulatory analysis.

Since the amendment imposes no burden on any person and is a clarification of an existing rule, notice and public procedures thereon are considered to be unnecessary.

Accordingly, pursuant to the authority contained in 35 U.S.C. 6, as amended and 35 U.S.C. 181–188, the rules of practice in 37 CFR Part 5, relating to licenses to file applications in foreign countries are amended as follows:

By revising § 5.19 to read:

§ 5.19 *Export of technical data.*

(a) Under regulations (15 CFR 370.10(j)) established by the U.S. Department of Commerce, International Trade Administration, Office of Export Administration, a validated export license is not required in any case to file a patent application or part thereof in a foreign country if the foreign filing is in accordance with the regulations (37 CFR 5.11-5.23) of the Patent and Trademark Office.

(b) A validated export license is not required for data contained in a patent application prepared wholly from foreign-origin technical data where such application is being sent to the foreign inventor to be executed and returned to the United States for subsequent filing in the U.S. Patent and Trademark Office (15 CFR 379.3(c)).

(3) Inquiries concerning the export control regulations for the foreign filing of technical data other than patent applications should be made to the Office of Export Administration, International Trade Administration, Department of Commerce, Washington, D.C. 20230.

Dated: Oct. 15, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Approval:

Dated: Oct. 28, 1980.

JORDAN J. BARUCH,
Assistant Secretary for Productivity, Technology and Innovation.

[FR Doc. 80–34082 Filed 10–31–80; 8:45 am]
Billing Code 3510–16–M

[1001 O.G. 15]

(89) No Change In Foreign Filing License Requirements

It should be noted that the change to 37 CFR 5.19 deleting the requirement to obtain an export license for filing a patent application in a foreign country does not in any way alter the provisions of 35 U.S.C. 184. 35 U.S.C. 184 requires that a foreign filing license be obtained from the Patent and Trademark Office before any patent application, based on an invention made in the United States, is filed abroad unless a corresponding application has been on file in the USPTO for over six months.

Further information may be obtained by contacting Mr. T. H. Tubbesing at 703–557–2897, or Mr. Edward Draxdowsky at 703–557–2167.

WILLIAM FELDMAN,
Date: Nov. 24, 1980. *Acting Assistant Commissioner, for Patents.*

[1001 O.G. 28]

Patent Cooperation Treaty Information

(90) PATENT COOPERATION TREATY (PCT) IMPLEMENTATION: INFORMATION FOR PROSPECTIVE APPLICANTS

International applications under the Patent Cooperation Treaty (PCT) may be filed with the Patent and Trademark Office beginning on 01 June 1978. In order to provide prospective applicants with information necessary for filing and to advise on the availability of various documents covering the requirements and procedures under the PCT, the following topics are included in this Notice:

I. Amendments to the Regulations under the Patent Cooperation Treaty.
II. Administrative Instructions under the Patent Cooperation Treaty.
III. Fees for the processing of International Applications.
IV. PCT Member States which may be designated in International Applications.
V. Availability of Documents concerning the Patent Cooperation Treaty.

A revision of pertinent parts of Title 37 of the Code of Federal Regulations incorporating changes necessary to implement the Patent Cooperation Treaty will be published in the near future.

TOPIC I: AMENDMENTS TO THE REGULATIONS UNDER THE PATENT COOPERATION TREATY (PCT)

The PCT Assembly at its first meeting on April 10–14, 1978 adopted several changes to the PCT Regulations. These changes are reproduced below so that prospective applicants who already have copies of the Treaty may incorporate the changes. To obtain copies of the Treaty, including the changes to the Regulations, see Topic V of this Notice.

AMENDMENTS TO THE REGULATIONS UNDER THE PATENT COOPERATION TREATY (PCT)

Adopted by the Assembly of the International Patent Cooperation (PCT) Union on April 14, 1978

TABLE OF AMENDMENTS

Rule 4.4(c)	Amended
Rule 4.10(d)	Amended
Rule 11.6(a)	Amended
Rule 11.6(b)	Amended
Rule 11.13(a)	Amended
Rule 15.2(a)	Amended
Rule 15.2(b)	Amended
Rule 32*bis*.1	New rule added
Rule 48.2(a)	Amended
Rule 48.3(c)	Amended
Rule 57.2(a)	Amended
Rule 57.2(b)	Amended
Rule 58.2	New rule added
Rule 58.3	New rule added
Rule 61.1(b)	Amended
Rule 74*bis*.1	New rule added
Rule 86.3(a)	Amended
Rule 86.3(b)	New rule added
Rule 86.4(a)	Amended
Rule 86.4(b)	New rule added

RULE 4

The Request (Contents)

4.4 ***Names and Addresses***

(c) Addresses shall be indicated in such a way as to satisfy the customary requirements for prompt postal delivery at the indicated address and, in any case, shall consist of all the relevant administrative units up to, and including, the house number, if any. Where the national law of the designated State does not require the indication of the house number, failure to indicate such number shall have no effect in that State. It is recommended to indicate any telegraphic and teleprinter address and telephone number.

4.10 ***Priority Claim***

(d) If the filing date of the earlier application as indicated in the request does not fall within the period of one year preceding the international filing date, the receiving Office, or, if the receiving Office has failed to do so, the International Bureau, shall invite the applicant to ask either for the cancellation of the declaration made under Article 8(1) or, if the date of the earlier application was indicated erroneously, for the correction of the date so indicated. If the applicant fails to act accordingly within 1 month from the date of the invitation, the declaration made under Article 8(1) shall be cancelled ex officio. The receiving Office effecting the correction or cancellation shall notify the applicant accordingly and, if copies of the international application have already been sent to the International Bureau and the International Searching Authority, that Bureau and that Authority. If the correction or cancellation is effected by the International Bureau, the latter shall notify the applicant and the International Searching Authority accordingly.

RULE 11

Physical Requirements of the International Application

11.6 ***Margins***

(a) The minimum margins of the sheets containing the request, the description, the claims, and the abstract, shall be as follows:

top: 2 cm
left side: 2.5 cm
right side: 2 cm
bottom: 2 cm

(b) The recommended maximum, for the margins provided for in paragraph (a), is as follows:

top: 4 cm
left side: 4 cm
right side: 3 cm
bottom: 3 cm

11.13 ***Special Requirements for Drawings***

(a) Drawings shall be executed in durable, black, sufficiently dense and dark, uniformly thick and well-defined, lines and strokes without colorings.

RULE 15

The International Fee

15.2 ***Amounts***

(a) The amount of the basic fee shall be:

(i) if the international application contains not more than 30 sheets: US $165.00 or 300 Swiss francs.

(ii) if the international application contains more than 30 sheets: US $165.00 or 300 Swiss francs plus US $3.00 or 6 Swiss francs per sheet in excess of 30 sheets.

(b) The amount of the designation fee for each designated State or each group of designated States for which the same regional patent is sought shall be: US $40.00 or 80 Swiss francs.

RULE 32*bis*

Withdrawal of the Priority Claim

32*bis*.1 ***Withdrawals***

(a) The applicant may withdraw the priority claim made in the international application under Article 8(1) at any time before the international publication of the international application.

(b) Where the international application contains more than one priority claim, the applicant may exercise the right provided for in paragraph (a) in respect of one or more or all of them.

(c) Where the withdrawal of the priority claim, or, in the case of more than one such claim, the withdrawal of any of them, causes a change in the priority date of the international application, any time limit which is computed from the original priority date and which has not already expired shall be computed from the priority date resulting from that change. In the case of the time limit of 18 months referred to in Article 21(2)(a), the International Bureau may nevertheless proceed with the international publication on the basis of the said time limit as computed from the original priority date if the withdrawal is effected during the period of 15 days preceding the expiration of that time limit.

(d) For any withdrawal under paragraph (a), the provisions of Rule 32.1(c) and (d) and Rule 74*bis*.1 shall apply *mutatis mutandis*.

RULE 48

International Publication

48.2 *Contents*

(a) The pamphlet shall contain:

(i) a standardized front page,

(ii) the description,

(iii) the claims,

(iv) the drawings, if any,

(v) subject to paragraph (g), the international search report or the declaration under Article 17(2)(a); the publication of the international search report in the pamphlet shall, however, not be required to include the part of the international search report which contains only matter referred to in Rule 43 already appearing on the front page of the pamphlet,

(vi) any statement filed under Article 19(1), unless the International Bureau finds that the statement does not comply with the provisions of Rule 46.4.

48.3 *Language*

(c) If the international application is published in a language other than English, the international search report to the extent that it is published under Rule 48.2(a)(v), or the declaration referred to in Article 17(2)(a), and the abstract shall be published both in that language and in English. The translations shall be prepared under the responsibility of the International Bureau.

RULE 57

The Handling Fee

57.2. *Amount*

(a) The amount of the handling fee shall be US $50.00 or 96 Swiss francs augmented by as many times the same amount as the number of languages into which the international preliminary examination report must, in application of Article 36(2), be translated by the International Bureau.

(b) Where, because of a later election or elections, the international preliminary examination report must, in application of Article 36(2), be translated by the International Bureau into one or more additional languages, a supplement to the handling fee shall be payable and shall amount to US $50.00 or 96 Swiss francs for each additional language.

RULE 58

The Preliminary Examination Fee

58.2 *Failure to pay*

(a) Where the preliminary examination fee fixed by the International Preliminary Examining Authority under Rule 58.1(b) is not paid as required under that Rule, the International Preliminary Examining Authority shall invite the applicant to pay the fee or the missing part thereof within one month from the date of the invitation.

(b) If the applicant complies with the invitation within the prescribed time limit, the preliminary examination fee will be considered as if it had been paid on the due date.

(c) If the applicant does not comply with the invitation within the prescribed time limit, the demand shall be considered as if it had not been submitted.

58.3 *Refund*

The International Preliminary Examining Authorities shall inform the International Bureau of the extent, if any, to which, and the conditions, if any, under which, they will refund any amount paid as a preliminary examination fee where the demand is considered as if it had not been submitted under Rule 57.4(c), Rule 58.2(c) or Rule 60.1(c), and the International Bureau shall promptly publish such information.

RULE 61

Notification of the Demand and Elections

61.1 *Notifications to the International Bureau, the Applicant, and the International Preliminary Examining Authority*

(b) The International Preliminary Examining Authority shall promptly inform the applicant in writing of the date of receipt of the demand. Where the demand has been considered under Rules 57.4(c), 58.2(c) or 60.1(c) as if it had not been submitted, the International Preliminary Examining Authority shall notify the applicant accordingly.

RULE 74*bis*

Notification of Withdrawal under Rule 32

74*bis*.1 *Notification of the International Preliminary Examining Authority*

If, at the time of the withdrawal of the international application or of the designation of all designated States under Rule 32.1, a demand for international preliminary examination has already been submitted and the international preliminary examination report has not yet issued, the International Bureau shall promptly notify the fact of withdrawal, together with the date of receipt of the notice effecting withdrawal, to the International Preliminary Examining Authority.

RULE 86

The Gazette

86.3 *Frequency*

(a) Subject to paragraph (b), the Gazette shall be published once a week.

(b) For a transitional period after the entry into force of the Treaty terminating upon a date fixed by the Assembly, the Gazette may be published at such times as the Director General considers appropriate having regard to the number of international applications and the amount of other material required to be published.

86.4 *Sale*

(a) Subject to paragraph (b), the subscription and other sale prices of the Gazette shall be fixed in the Administrative Instructions.

(b) For a transitional period after the entry into force of the Treaty terminating upon a date fixed by the Assembly, the Gazette may be distributed on such terms as the Director General considers appropriate having regard to the number of international applications and the amount of other material published therein.

[Topic II not reprinted]

(91) UPDATE OF INFORMATION CONCERNING THE PATENT COOPERATION TREATY

[Topics 1 and 2 not reprinted]

TOPIC 3: CHANGES IN THE PCT RULES

The following PCT Rule changes, adopted by the PCT Assembly on May 1, 1979 become effective on August 1, 1979 with the exception of the changes in PCT Rule 47 which became available on May 1, 1979.

RULE 15

The International Fee

15.1 ***Basic Fee and Designation Fee***

Each international application shall be subject to the payment of a fee for the benefit of the International Bureau ("international fee") to be collected by the receiving Office and consisting of,

(i) a "basic fee," and

(ii) as many "designation fees" as there are national patents and regional patents sought by the applicant in the international application, except that, where Article 44 applies in respect of a designation, only one designation fee shall be due.

15.2 ***Amounts***

(a) The amounts of the basic fee and of the designation fee are as set out in the Schedule of Fees.

(b) The amounts of the basic fee and of the designation fee shall be established, for each receiving Office which, under Rule 15.3, prescribes the payment of those fees in a currency or currencies other than Swiss currency, by the Director General after consultation with that Office and in the currency or currencies prescribed by that Office ("prescribed currency"). The amounts in each prescribed currency shall be the equivalent, in round figures, of the amounts in Swiss currency set out in the Schedule of Fees. They shall be published in the Gazette.

(c) Where the amounts of the fees set out in the Schedule of Fees are changed, the corresponding amounts in the prescribed currencies shall be applied from the same date as the amounts set out in the amended Schedule of Fees.

(d) Where the exchange rate between Swiss currency and any prescribed currency becomes different from the exchange rate last applied, the Director General shall establish new amounts in the prescribed currency according to directives given by the Assembly. The newly established amounts shall become applicable two months after the date of their publication in the Gazette, provided that the interested Office and the Director General may agree on a date falling amounts shall become applicable for that Office from that date.

15.3 ***Mode of Payment***

The international fee shall be payable in the currency or currencies prescribed by the receiving Office, it being understood that, when transferred by the receiving Office to the International Bureau, the amount transferred shall be freely convertible into Swiss currency.

15.4 ***Time of Payment***

(a) Subject to paragraph (c), the basic fee shall be due on the date of receipt of the international application.

(b) Subject to paragraph (c), the designation fee shall be paid on the date of receipt of the international application or on any later date prior to the expiration of one year from the priority date.

(c) The receiving Office may permit applicants to pay either the basic fee or the designation fee or both of the fees later than on the dates provided for in paragraphs (a) and (b), provided that:

(i) permission shall not be given to pay the basic fee or the designation fee later than one month after the date of receipt of the international application;

(ii) permission may not be subject to any extra charge. Such later payment of the said fees shall be without loss, in the case of the basic fee, of the international filing date, or, in the case of the designation fee, of the designations to which the payment relates.

15.5 ***Partial Payment***

(a) Where the amount of the international fee received by the receiving Office is not less than that of the basic fee and at least one designation fee but less than the amount required to cover the basic fee and all the designations made in the international application, the amount received shall be applied as follows:

(i) to cover the basic fee, and

(ii) to cover as many designation fees as, after deduction of the basic fee, may be covered in full by the amount received in the order indicated in paragraph (b).

(b) The order in which the said amount shall be applied to the designations shall be established as follows:

(i) where the applicant indicates to which designation or designations the amount is to be applied, it shall be applied accordingly but, if the amount received is insufficient to cover the designations indicated, it shall be applied to as many designations as are covered by it in the order chosen by the applicant in indicating the designations;

(ii) to the extent that the applicant has not given the indications under item (i), the amount or the balance thereof shall be applied to the designations in the order in which they appear in the international application;

(iii) where the designation of a State is for the purposes of a regional patent and provided that the required designation fee is, under the preceding provisions available for that designation, the designation of any further States for which the same regional patent is sought shall be considered as covered by that fee.

15.6: [No change]

RULE 16

The Search Fee

16.1 ***Right to Ask for a Fee***

(a) [No change]

(b) The search fee shall be collected by the receiving Office. The said fee shall be payable in the currency or currencies prescribed by that Office ("the receiving Office currency"), it being understood that, if any receiving Office currency is not that, or one of those, in which the International Searching Authority has fixed the said fee ("the fixed currency or currencies"), it shall, when transferred by the receiving Office to the International Searching Authority, be freely convertible into the currency of the State in which the International Searching Authority has its headquarters ("the headquarters currency"). The amount of the search fee in any receiving Office currency, other than the fixed currency or currencies, shall be established by the Director General after consultation with that Office. The amounts so established shall be the equivalents, in round figures, of the amount established by the International Searching Authority in the headquarters currency. They shall be published in the Gazette.

(c) Where the amount of the search fee in the headquarters currency is changed, the corresponding amounts in the receiving Office currencies, other than the fixed currency or currencies, shall be applied from the same date as the changed amount in the headquarters currency.

(d) Where the exchange rate between the headquarters currency and any receiving Office currency, other than the fixed currency or currencies, becomes different from the exchange rate last applied, the Director General shall establish the new amount in the said receiving Office currency according to directives given by the Assembly. The newly established amount shall become applicable two months after its publication in the Gazette, provided that any interested receiving Office and the Director General may agree on a date falling during the said two-month period in which case the said amount shall become applicable for that Office from that date.

(e) Where, in respect of the payment of the search fee in a receiving Office currency, other than fixed currency or currencies, the amount actually received by the International Searching Authority in the headquarters currency is less than that fixed by it, the difference will be paid to the International Searching Authority by the International Bureau, whereas, if the amount actually received is more, the difference will belong to the International Bureau.

(f) As to the time of payment of the search fee, the provisions of Rule 15.4 relating to the basic fee shall apply.

16.2: [No change]

16.3: [No change]

RULE 47

Communication to Designated Offices

47.1 *Procedure*

(a) [No change]

(b) Such communication shall be effected promptly after the international publication of the international application and, in any event, by the end of the 19th month after the priority date. Where the time limit under Rule 46.1 has not expired when the communication is effected and the International Bureau has neither received amendments from the applicant nor a declaration that the applicant does not wish to make amendments before the International Bureau, the International Bureau shall, at the time of the communication, notify the applicant and the designated Offices accordingly; it shall, immediately after receipt, communicate any amendment received subsequently to the designated Offices and notify the applicant accordingly. Where, under Article 17(2)(a), the International Searching Authority has made a declaration that no international search report will be established, the communication shall be effected, unless the international application is withdrawn, within 1 month from the date on which the International Bureau has been notified of the said declaration by the International Searching Authority; such communication shall be accompanied by an indication of the date of the notification sent to the applicant under Article 17(2)(a).

(c) [No change]

(d) [No change]

(e) [No change]

47.2 *Copies*

(a) [No change]

(b) [No change]

(c) Except to the extent that any designated Office notifies the International Bureau otherwise, copies of the pamphlet under Rule 48 may be used for the purposes of the communication of the international application under Article 20.

RULE 57

The Handling Fee

57.1 *Requirement to Pay*

(a) Each demand for international preliminary examination shall be subject to the payment of a fee for the benefit of the International Bureau ("handling fee") to be collected by the International Preliminary Examining Authority to which the demand is submitted.

(b) Where, because of a later election or elections, the international preliminary examination report must, in application or Article 36(2), be translated by the International Bureau into one or more additional languages, a "supplement to the handling fee" shall be collected by the International Bureau.

57.2 *Amounts of the Handling Fee and the Supplement to the Handling Fee*

(a) The amount of the handling fee is as set out in the Schedule of Fees. The amount payable in any particular case shall be the amount as so set out, increased by as many times the same amount as the number of languages into which the international preliminary examination report must, in application of Article 36(2), be translated by the International Bureau.

(b) The amount of the supplement to the handling fee is as set out in the Schedule of Fees. The amount payable in any particular case shall be the amount as so set out, multiplied by the number of additional languages referred to in Rule 57.1(b)

(c) The amount of the handling fee shall be established, for each International Preliminary Examining Authority which, under Rule 57.3(c), prescribes the payment of the handling fee in a currency or currencies other than Swiss currency, by the Director General after consultation with that Authority and in the currency or currencies prescribed by that Authority ("prescribed currency"). The amount in each prescribed currency shall be the equivalent, in round figures, of the amount of the handling fee in Swiss currency set out in the Schedule of Fees. The amounts in the prescribed currencies shall be published in the Gazette.

(d) Where the amount of the handling fee set out in the Schedule of Fees is changed, the corresponding amounts in the prescribed currencies shall be applied from the same date as the amount set out in the amended Schedule of Fees.

(e) Where the exchange rate between Swiss currency and any prescribed currency becomes different from the exchange rate last applied, the Director General shall establish the new amount in the prescribed currency according to directives given by the Assembly. The newly established amount shall become applicable two months after its publication in the Gazette, provided that the interested International Preliminary Examining Authority and the Director General may agree on a date falling during the said two-month period in which case the said amount shall become applicable for that Authority from that date.

57.3 *Time and Mode of Payment*

(a) The handling fee shall be due at the time the demand is submitted.

(b) Any supplement to the handling fee shall be due at the time the later election is submitted.

(c) The handling fee shall be payable in the currency or currencies prescribed by the International Preliminary Examining Authority to which the demand is submitted, it being understood that, when transferred by that Authority to the International Bureau, it shall be freely convertible into Swiss currency.

(d) Any supplement to the handling fee shall be payable in Swiss currency.

57.4 *Failure to Pay (Handling Fee)*

(a) Where the handling fee is not paid as required, the International Preliminary Examining Authority shall invite the applicant to pay the fee within one month from the date of the invitation.

(b) If the applicant complies with the invitation within the prescribed time limit, the demand shall be considered as if it had been received on the date on which the International Preliminary Examining Authority receives the fee, unless, under Rule 60.1(b), a later date is applicable.

(c) If the applicant does not comply wtih the invitation within the prescribed time limit, the demand shall be considered as if it had not been submitted.

57.5 *Failure to Pay (Supplement to the Handling Fee)*

(a) Where the supplement to the handling fee is not paid as required, the International Bureau shall invite the applicant to pay the supplement within one month from the date of the invitation.

(b) If the applicant complies with the invitation within the prescribed time limit, the later election shall be considered as if it had been received on the date on which the International Bureau receives the supplement, unless, under Rule 60.2(b), a later date is applicable.

(c) If the applicant does not comply with the invitation within the prescribed time limit, the later election shall be considered as if it had not been submitted.

57.6 *Refund*

In no case shall the handling fee, or the supplement to the handling fee, be refunded.

RULE 96

The Schedule of Fees

96.1 *Schedule of Fees Annexed to Regulations*

The amounts of the fees referred to in Rules 15 and 57 shall be expressed in Swiss currency. They shall be specified in the Schedule of Fees which is annexed to these Regulations and forms an integral part thereof.

SCHEDULE OF FEES

Kind of Fee	*Amount*
1. *Basic Fee:* (Rule 15.2(a)) if the international application contains not more than 30 sheets	325 Swiss francs
if the international application contains more than 30 sheets	325 Swiss francs plus 6 Swiss francs for each sheet in excess of 30 sheets
2. *Designation Fee:* (Rule 15.2 (a))	78 Swiss francs
3. *Handling Fee:* (Rule 57.2(b))	100 Swiss francs
4. *Supplement to the Handling Fee:* (Rule 57.2(a))	100 Swiss francs

TOPIC 4 : CHANGES IN THE ADMINISTRATIVE INSTRUCTIONS

The following modifications in the Administrative Instructions have been promulgated by the Director General of the World Intellectual Property Organization in accordance with PCT Rule 89.2 with effect from November 9, 1978.

SECTION 107

Identification of International Authorities

[Only the modification is specified]

The example of Section 107(b), is modified to read "(e.g., "RO/JP," "ISA/US," "IPEA/SU")."

SECTION 201

Names of States: Cancellation of Designations

(*a*) The name of any State referred to in the request shall be indicated either by the full name of the State or by a generally accepted short title which, if the indications are in English or French, shall be as appears in *Annex A*. The receiving Office, or the International Bureau where the receiving Office fails to do so, shall insert, in the appropriate space provided for in the request Form, the two-letter country code as appears in *Annex B* (for example, where France is the third designated State in Box V of the request form, "FR 3. France" or "FR 3. French Republic").

(*b*) The receiving Office shall cancel *ex-officio* the designation of States other than Contracting States, and inform the applicant promptly of such action. If the international application has already been sent to the International Bureau and the International Searching Authority, the receiving Office shall also notify promptly that Bureau and that Authority. In any event, the International Bureau shall, where the receiving Office fails to do so, cancel *ex-officio* the designation of States other than Contracting States and inform the applicant, the receiving Office and the International Searching Authority promptly of such action.

SECTION 203bis

National and Regional Patents

Where the request of the international application contains a designation of a Contracting State without an indication of the wish to obtain a regional patent and also a designation of the same Contracting State with an indication of the wish to obtain a regional patent and the national law of the Contracting State does not contain a provision referred to in Article 45(2), the receiving Office shall calculate the designation fees on the basis that a separate fee is payable in respect of the designation of the Contracting State in addition to the designation fee payable in respect of that Contracting State as a Contracting State or as one of a group of Contracting States for which a regional patent is sought.

SECTION 317

Procedure in the Case of the Designation of a State being Considered Not To Have Been Made

Where the receiving Office finds that, under Rule 18.4(b), the designation of a State is to be considered as not having been made, it shall indicate that fact in the international application by enclosing the designation of that State within square brackets and entering the words "CONSIDERED NOT TO HAVE BEEN MADE," or their equivalent in the language of the international application, in the margin, and shall promptly notify the applicant accordingly. If copies of the international application have alrealy been sent to the International Bureau and the International Searching Authority, the receiving Office shall also notify promptly that Bureau and that Authority.

SECTION 412

Fee for Copies of Certain Documents

(*a*) The International Bureau shall make a charge of 6 Swiss francs to designated and elected Offices for a copy of any document cited in the international search report requested under Rule 44.3(c) or any document cited in the international preliminary examination report requested under Rule 71.2(c).

(*b*) When mailing by air is requested the actual cost of such mailing shall be additionally charged.

SECTION 503

Method of Identifying Documents Cited in the International Search Report

[Only the modification is specified]

In the example given in Section 503(a), the number of the patent document is modified to read : "JP, B, 50–14535."

[984 O.G. 2]

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(92) Update of Information Concerning the Patent Cooperation Treaty (PCT)

[Topics 1, 2, 3 and 5 not reprinted]

TOPIC 4 : NOTE CONCERNING THE PATENT TREATY BETWEEN SWITZERLAND AND LIECHTENSTEIN

On April 1, 1980, a Patent Treaty between Switzerland and Liechtenstein will enter into force and, on the same day, the European Patent Convention will enter into force for Liechtenstein. Certain modifications to the Administrative Instructions under the PCT relating to the designation of Switzerland and Liechtenstein in international applications will also enter into force on April 1, 1980.

Under the Treaty between Switzerland and Liechtenstein, the two will constitute a single territory for patent purposes and the Swiss Intellectual Property Office will have assigned to it the performance of the administrative tasks related hereto. The Swiss Intellectual Property Office will also act as the receiving Office for international applications under the PCT filed by the nationals and residents of Liechtenstein. The designation of either Switzerland or Liechtenstein in an international application will automatically have the effect of the desgnation of both.

Until April 1, 1980, international applications which designate Switzerland (whether for the purposes of a national patent or for a European patent) will have effect for Liechtenstein once a patent is granted by virtue of the present law in Liechtenstein which extends to Liechtenstein the effect of patents having effect for Switzerland. This makes it unnecessary to designate Liechtenstein in international applications filed prior to April 1, 1980; indeed, no provision will exist for effect to be given to such a designation prior to that date.

From April 1, 1980, the designation of Switzerland and Liechtenstein (or either of them without the other) in an

international application (whether for the purposes of a patent granted by the Swiss Intellectual Property Office or for the purposes of a European patent) will have the effect of a designation for the purposes of a single patent granted with reference to and having effect for both Switzerland and Liechtenstein.

The following principles will apply with respect to the designation of Switzerland and Liechtenstein (or both) in international applications:

European Patents. If the designation is for the purposes of a European patent, the indication that a regional patent is sought (or alternatively that a European patent is sought) must be given in connection with the designation.

Patents granted by Swiss Intellectual Property Office. If a patent to be granted by the Swiss Intellectual Property Office is sought, the designation must not contain any further indications besides the name of Switzerland or Liechtenstein (or both), in particular the words "regional patent" must not be used.

Double Designations. The designation of Switzerland and Liechtenstein for the purposes of a European patent and also for the purposes of a patent granted by the Swiss Intellectual Property Office (i.e., a double designation) is also possible where either of them (or both) is (are) indicated once with the indication that a regional patent is sought and once without such indication.

No additional designation fee will be payable under the PCT by reason of the fact that Liechtenstein is included in the designation of Switzerland and *vice versa* since the effect of the Treaty between Switzerland and Liechtenstein is, for the purposes of the PCT, to create a unitary regional patent for the two States.

June 17, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

[996 O.G. 16]

(93) Revised Patent Cooperation Treaty (PCT) Regulations

The fifth session of the Assembly of the International Patent Cooperation Treaty (PCT) Union was held in Geneva, Switzerland from June 9–16, 1980. At this meeting numerous changes in the PCT Rules were adopted to make the PCT route more attractive to prospective applicants.

The amendments to (including, where applicable, deletions affecting) PCT Rules 4.1(b)(ii), 4.8(b), 4.10(b), 4.11, 10.1(b), 10.1(c), 11.2(d), 11.12, 11.13(j), 13.2, 15.5, 17.1, 18.5, 19.2, 22.5, 30.1, 41, 46.2, 47.1(c), 54.4, 55.1, 57.4(b), 57.5(b), 60.1(b), 60.2(b), 80.6, 90.3(a), and 92.1(b) and to the Schedule of Fees and new Rules 11.10(d), 16*bis*, 20.3*bis*, 90.3(d), 91.2, 92.1(c), 92.4, and 92*bis*, become effective on October 1, 1980.

New Rule 13*bis* and the amendments to Rules 49.3 and 76.3 (the latter being consequential upon the amendment of Rule 49.3), become effective on January 1, 1981.

COMMENTS ON RULE CHANGES

Rule 4.1(b)(ii) and 4.11. A reference to an "other" search has been added in the Request to allow reference to a search which is neither an international nor an international-type search. This provision would call such a search to the attention of the International Searching Authority for possible refund of a portion of the search fee under PCT Rule 41. The standard practice of the United States Patent and Trademark Office (USPTO) to allow such reference and make such refunds will continue.

Rule 4.8(b). This Rule relates to the situation where there are plural applicants and no common agent or common representative has been appointed. The amended Rule states that the first named applicant who is entitled to file with the receiving Office in which the international application was filed will be considered to be the "common representative."

Rule 4.10(b). The last sentence has been amended to allow corrections to be made in the priority claim information where it is necessary due to an obvious error of transcription or due to the missing data which can be supplied on the basis of information the receiving Office has available to it.

Rule 10.1(b). The word "centigrade" has been replaced by the word "Celsius" to adopt current usage.

Rule 10.1(c). This paragraph was deleted since in effect it duplicated the requirements of Rule 10.1(a).

Rules 11.2(d) and 11.10(d). These Rules have been amended to provide for placing tables and chemical or mathematical formulae sideways on the sheets.

Rule 11.12. The phrase, "in exceptional cases," has been deleted. Accordingly, the Rule will now permit interlineations and other changes in the typed text as long as good reproduction is not in jeopardy.

Rule 11.13(j). The second sentence was added to indicate the arrangement of sideways positioned figures on drawing sheets.

Rule 13.2. This Rule, which relates to unity of invention, has been amended by adding a new section (iii) and by changing "one" to "an" or "a" in sections (i) and (ii). The USPTO will continue to apply the criteria set forth in M.P.E.P., sections 806.05(f) and 806.05(g). These criteria are considered to come within the wording "specially adapted" and "specifically designed," of Rule 13.2(iii).

Rule 13*bis*. This Rule was added to facilitate the filing of international applications relating to or involving the use of microorganisms which are not available to the public but have been deposited with a depositary institution. The Rule sets out the indications concerning such a deposit which must be included in an international application or furnished later (generally within 16 months after the priority date). Compliance with any national requirements diverging from this Rule will only be necessary if a designated State has notified the International Bureau of WIPO of the national requirement and the national requirement has been published in the PCT Gazette at least 2 months before the filing of the international application. Any notification received by the International Bureau of WIPO will be published in an issue of the PCT Gazette by the end of October 1980.

Where the Budapest Treaty on the International Recognition of the Deposit of Microorganizms for the Purposes of Patent Procedure does not govern the depositary institution with which a microrganism may be deposited for the purposes of any designated State, a deposit conforming with the law of the designated State will be required. The issue of the PCT Gazette referred to above will also contain notifications as to the depositary institutions with which deposits of microorganisms may be made for each such Office as well as those Offices whose national law does not make provision for such deposits.

Rule 15.5. The section on partial payment has been deleted in view of new Rule 16*bis*.

Rule 16*bis*. New Rule 16*bis* was added to provide greater security to the applicant and his professional representative in the case of a mistake (as to the prescribed amount) or delay (beyond the prescribed time limit) in the payment of fees to the receiving Office (transmittal fee, search fee, and international fee, i.e., basic fee and designation fees). The system introduced by this Rule guarantees the timely payment of these fees by the International Bureau of WIPO, thereby assuring that any mistake in the amount of the fee, or any delay in payment will not result in a loss of the application.

The new system operates in the following fashion. Where the receiving Office finds the amount paid to be insufficient to cover all fees due, the receiving Office will charge the International Bureau with the missing amount. The International Bureau will then notify the applicant of the amount it has advanced and will invite the applicant to pay the International Bureau the amount advanced, together with a 50% surcharge. The surcharge, however, cannot be less than 200 or more than 500 Swiss francs (see the Schedule of Fees.) If the applicant does not timely pay the required amount to the International Bureau, the latter will notify the receiving Office which will then declare the international application, or certain designations therein, withdrawn.

Rule 17.1. As amended, this Rule now provides that the priority document may be submitted to the receiving Office not only at the time of filing the international application but at any time thereafter, up to the expiration of 16 months from the priority date. The amended Rule also provides that where the priority document is issued by the receiving Office, the applicant may, up to the expiration of 16 months from the priority date, simply request the receiving Office to transmit the priority document to the International Bureau of WIPO. The date of the request to the receiving Office or the date of receipt of the priority document by the receiving Office will be considered as the date of receipt of the priority document.

Rule 18.5. This paragraph was deleted in view of new Rule 92*bis* relating to changes in the person or name of the applicant.

Rule 19.2. This Rule has been rewritten to clearly indicate that if there are several applicants, an international application is properly filed as long as at least one of the applicants has the right to file in the receiving Office.

Rule 20.3*bis*. This is a new paragraph which simply refers to the Administrative Instructions (Section 309) for the manner of submitting corrections, where the original papers filed could not be granted a filing date.

Rule 22.5. Amended Rule 22.5 clarifies the handling of documents filed with the international application and which are referred to in the check list portion of the Request.

Rule 30.1. The time limit for determining that a filing date should not have been granted has been reduced from 6 months to 4 months from the international filing date.

Rule 41. This Rule now provides for the granting of a search fee refund on a search other than an international or international-type search.

Rule 46.2. Under the amended Rule, applicants will be notified of the date of receipt of any amendment under PCT Article 19 by the International Bureau.

Rule 47.1. Amended Rule 47.1(c) provides greater security to the applicant with regard to the communication of the international application to designated Offices under Article 20 of the PCT. Thus, the International Bureau of WIPO will, besides notifying the applicant of the communication, also notify each designated Office separately. This separate notification will be conclusive evidence that the international application was communicated to each designated Office, thereby avoiding the possibility that the applicant himself would be required to file another copy of the international application, in the event the communication by the International Bureau was defective.

It is noted, however, that until the patent law of Sweden is changed, this new system will not be permitted with respect to communications of international applications to the Swedish Patent Office.

Rule 49.3. This Rule has been amended to provide for translations of indications under Rule 13*bis* 4 which were not included in the original international application, and which refer to a deposited microorganism.

Rule 54.4, Rule 55.1, Rule 57.4(b), Rule 57.5(b), Rule 60.1(b), Rule 60.2(b), Rule 76.3 and Rule 80.6. These rules all relate to Chapter II procedure which is not available to international applications filed in the United States Receiving Office or designating the United States of America (35 U.S.C. 351(a)).

Rule 90.3(a). This Rule has been rewritten to clarify the fact that the appointment of an agent or common representative by the applicant can be made either on the request form or by a separate power of attorney.

Rule 90.3(d). This is a new Rule which provides for the use of general powers of attorney for the purpose of filing and processing international applications up to the point of entering the designated Offices. General powers of attorney will not be recognized by the United States Patent and Trademark Office for regularly filed national applications, or for international applications once they enter the national phase. A form for a general power of attorney appears in Annex M2 of the "PCT Applicant's Guide." Original copies of general powers of attorney must be filed with the PCT Division and a copy thereof filed in each international application relying thereon for the power of attorney.

Rule 91.2. This new Rule merely refers to the Administrative Instructions for the manner of making corrections of obvious errors of transcription.

Rule 92.1. Paragraph (b) has been substantially rewritten to require that the applicant be informed if a letter received from him was unsigned and that he be given time to correct such defect. If the defect is overlooked, new paragraph (c) indicates that the defect shall be disregarded.

Rule 92.4. This is a new paragraph which provides for timely receipt by International Authorities of responses filed by telegraph, teleprinter, etc., provided that the formal responses follow within 14 days.

Rule 92*bis*. This new Rule relates to changes in the person, name, residence, nationality, or address of the applicant and the person, name, or address of the inventor or agent.

Schedule of Fees. Item 5 has been added to set minimum and maximum amounts of surcharges for late payment under Rule 16*bis*.

Changes in Administrative Instructions effective October 1, 1980.

Section 106. The first paragraph has been designated "(a)" and a new paragraph (b) has been added to indicate that applicants who have not signed a general power of attorney for the purpose of appointing a common agent, may sign either the Request or a separate power of attorney.

Section 111. This is a new section requiring that any request for changes under Rule 92*bis*, be signed by the applicant or the receiving Office, depending upon who made the request.

Section 204. Paragraph "(v)" has been amended to provide for the indication of "Mode(s) for Carrying Out the Invention," in instances where the countries designated do not require an identification of the "best mode."

Section 205. Paragraph (a)(ii) has been amended to provide a procedure under Article 19 for adding a new claim with a number lower than the highest previously numbered claim.

Section 306. This Section has been deleted in view of new Section 111 and the cancellation of Rule 18.5.

Forms PCT/RO/101 and PCT/ISA/210 have only been changed in very minor aspects and are not included with this notice. The current forms may be used until the supply is exhausted. Future printings of these forms will incorporate the changes.

A copy of the amended PCT Rules and Administrative Instructions follows.

Aug. 25, 1980.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

RULE 4

The Request (Contents)

4.1 *Mandatory and Optional Contents; Signature*

(a) [No change]

(b) The request shall, where applicable, contain:

(i) a priority claim,

(ii) a reference to any earlier international, international-type or other search,

(iii) choices of certain kinds of protection,

(iv) an indication that the applicant wishes to obtain a regional patent and the names of the designated States for which he wishes to obtain such a patent,

(v) a reference to a parent application or parent patent.

(c) [No change]

(d) [No change]

4.2 [No change]

4.3 [No change]

4.4 [No change]

4.5 [No change]

4.6 [No change]

4.7 [No change]

4.8 *Representation of Several Applicants Not Having a Common Agent*

(a) [No change]

(b) If there is more than one applicant and the request does not refer to an agent representing all the applicants and it does not comply with the requirement of designating one of the applicants as provided in paragraph (a), the common representative shall be the applicant first named in the request who is entitled to file an international application with the receiving Office with which the international application was filed (Rule 19.1(a)).

4.9 [No change]

4.10 *Priority Claim*

(a) [No change]

(b) If the request does not indicate both

(i) when the earlier application is not a regional or an international application, the country in which it was filed; when the earlier application is a regional or an international application, at least one country for which it was filed, and

(ii) the date on which it was filed,

the priority claim shall, for the purposes of the procedure under the Treaty, be considered not to have been made except where, resulting from an obvious error of transcription, the indication of the said country or the said date is missing or is erroneous; whenever the identity or correct identity of the said country, or the said date or the correct date, may be established on the basis of the copy of the earlier application which the receiving Office receives before it transmits the record copy to the International Bureau, the error shall

be considered as an obvious error.
(c) [No change]
(d) [No change]
(e) [No change]

4.11 *Reference to Earlier Search*

If an international or international-type search has been requested on an application under Article 15(5) or if the applicant wishes the International Searching Authority to base the international search report wholly or in part on the results of a search, other than an international or international-type search, made by the national Office or intergovernmental organisation which is the International Searching Authority competent for the international application, the request shall contain a reference to that fact. Such reference shall either identify the application (or its translation, as the case may be) in respect of which the earlier search was made by indicating country, date and number, or the said search by indicating, where applicable, date and number of the request for such search.

4.12 [No change]
4.13 [No change]
4.14 [No change]
4.15 [No change]
4.16 [No change]
4.17 [No change]

RULE 10

Terminology and Signs

10.1 *Terminology and Signs*

(a) [No change]
(b) Temperatures shall be expressed in degrees Celsius, or also expressed in degrees Celsius, if first expressed in a different manner.
(c) [Deleted]
(d) [No change]
(e) [No change]
(f) [No change]

10.2 [No change]

RULE 11

Physical Requirements of the International Application

11.1 [No change]

11.2 *Fitness for Reproduction*

(a) [No change]
(b) [No change]
(c) [No change]
(d) Subject to Rule 11.10(d) and Rule 11.13(j), each sheet shall be used in an upright position (i.e., the short sides at the top and bottom).

11.3 [No change]
11.4 [No change]
11.5 [No change]
11.6 [No change]
11.7 [No change]
11.8 [No change]
11.9 [No change]

11.10 *Drawings, Formulae, and Tables, in Text Matter*

(a) [No change]
(b) [No change]
(c) [No change]
(d) Tables and chemical or mathematical formulae may be placed sideways on the sheet, if they cannot be presented satisfactorily in an upright position thereon: sheets on which tables or chemical or mathematical formulae are presented sideways shall be so presented that the tops of the tables or formulae are at the left side of the sheet.

11.11 [No change]

11.12 *Alterations, Etc.*

Each sheet shall be reasonably free from erasures and shall be free from alterations, overwritings, and interlineations. Non-compliance with this Rule may be authorized if the authenticity of the content is not in question and the requirements for good reproduction are not in jeopardy.

(a) [No change]
(b) [No change]
(c) [No change]
(d) [No change]
(e) [No change]
(f) [No change]
(g) [No change]
(h) [No change]
(i) [No change]
(j) The different figures shall be arranged on a sheet or sheets without wasting space, preferably in an upright position, clearly separated from one another. Where the figures are not arranged in an upright position, they shall be presented sideways with the top of the figures at the left side of the sheet.
(k) [No change]
(l) [No change]
(m) [No change]
(n) [No change]

11.14 [No change]
11.15 [No change]

RULE 13

Unity of Invention

13.1 [No change]

13.2 *Claims of Different Categories*

Rule 13.1 shall be construed as permitting, in particular, one of the following three possibilities:

(i) in addition to an independent claim for a given product, the inclusion in the same international application of an independent claim for a process specially adapted for the manufacture of the said product, and the inclusion in the same international application of an independent claim for a use of the said product, or
(ii) in addition to an independent claim for a given process, the inclusion in the same international application of an independent claim for an apparatus or means specifically designed for carrying out the said process, or
(iii) in addition to an independent claim for a given product, the inclusion in the same international application of an independent claim for a process specially adapted for the manufacture of the product, and the inclusion in the same international application of an independent claim for an apparatus or means specifically designed for carrying out the process.

13.3 [No change]
13.4 [No change]
13.5 [No change]

RULE 13*bis*

Microbiological Inventions

13*bis*.1 *Definition*

For the purposes of this Rule, "reference to a deposited microorganism" means particulars given in an international application with respect to the deposit of a microorganism with a depositary institution or to the microorganism so deposited.

13*bis*.2 *References (General)*

Any reference to a deposited microorganism shall be made in accordance with this Rule and, if so made, shall be considered as satisfying the requirements of the national law of each designated State.

13*bis*.3 *References: Contents; Failure to Include Reference or Indication*

(a) A reference to a deposited microorganism shall indicate,
(i) the name and address of the depositary institution with which the deposit was made;
(ii) the date of deposit of the microorganism with that institution;
(iii) the accession number given to the deposit by that institution; and
(iv) any additional matter of which the International Bureau has been notified pursuant to Rule 13*bis*.7(a)(i), provided that the requirement to indicate that matter was published in the Gazette in accordance with the Rule 13*bis*.7(c) at least two months before the filing of the international application.

(b) Failure to include a reference to a deposited microorganism or failure to include, in a reference to a deposited microorganism, an indication in accordance with paragraph (a), shall have no consequence in any designated State whose national law does not require such reference or such indication in a national application.

13*bis*.4 *References: Time of Furnishing Indications*

If any of the indications referred to in Rule 13*bis*.3(a) is not included in a reference to a deposited microorganism in the international application as filed but is furnished by the applicant to the International Bureau within 16 months after

the priority date, the indication shall be considered by any designated Office to have been furnished in time unless its national law requires the indication to be furnished at an earlier time in the case of a national application and the International Bureau has been notified of such requirement pursuant to Rule 13*bis*.7(a)(ii), provided that the International Bureau has published such requirement in the Gazette in accordance with Rule 13*bis*.7(c) at least two months before the filing of the international application. In the event that the applicant makes a request for early publication under Article 21(2)(b), however, any designated Office may consider any indication not furnished by the time such request is made as not having been furnished in time. Irrespective of whether the applicable time limit under the preceding sentences has been observed, the International Bureau shall notify the applicant and the designated Offices of the date on which it has received any indication not included in the international application as filed. The International Bureau shall indicate that date in the international publication of the international application if the indication has been furnished to it before the completion of technical preparations for international publication.

13*bis*.5 *References and Indications for the Purposes of One or More Designated States; Different Deposits for Different Designated States; Deposits with Depositary Institutions other than Those Notified*

(a) A reference to a deposited microorganism shall be considered to be made for the purposes of all designated States, unless it is expressly made for the purposes of certain of the designated States only; the same applies to the indications included in the reference.

(b) References to different deposits of the microorganism may be made for different designated States.

(c) Any designated Office shall be entitled to disregard a deposit made with a depositary institution other than one notified by it under Rule 13*bis*.7(b).

13*bis*.6 *Furnishing of Samples*

(a) Where the international application contains a reference to a deposited microorganism, the applicant shall, upon the request of the International Searching Authority or the International Preliminary Examining Authority, authorize and assure the furnishing of a sample of that microorganism by the depositary institution to the said Authority, provided that the said Authority has notified the International Bureau that it may require the furnishing of samples and that such samples will be used solely for the purposes of international search for international preliminary examination, as the case may be, and such notification has been published in the Gazette.

(b) Pursuant to Articles 23 and 40, no furnishing of samples of the deposited microorganism to which a reference is made in an international application shall, except with the authorization of the applicant, take place before the expiration of the applicable time limits after which national processing may start under the said Articles. However, where the applicant performs the acts referred to in Articles 22 or 39 after international publication but before the expiration of the said time limits, the furnishing of samples of the deposited microorganism may take place, once the said acts have been performed. Notwithstanding the previous provision, the furnishing of samples from the deposited microorganism may take place under the national law applicable for any designated Office as soon as, under that law, the international publication has the effects of the compulsory national publication of an unexamined national application.

13*bis*.7 *National Requirements: Notification and Publication*

(a) Any national Office may notify the International Bureau of any requirement of the national law,

(i) that any matter specified in the notification, in addition to those referred to in Rule 13*bis*.3(a)(i), (ii) and (iii), is required to be included in a reference to a deposited microorganism in a national application;

(ii) that one or more of the indications referred to in Rule 13*bis*.3(a) are required to be included in a national application as filed or are required to be furnished at a time specified in the notification which is earlier than 16 months after the priority date.

(b) Each national Office shall notify the International Bureau a first time before entry into force of this Rule and then each time a change occurs of the depositary institutions with which the national law permits deposits of microorganisms to be made for the purposes of patent procedure before that Office or, if the national law does not provide for or permit such deposits, of that fact.

(c) The International Bureau shall promptly publish in the Gazette requirements notified to it under paragraph (a) and information notified to it under paragraph (b).

RULE 15

The International Fee

15.1 [No change]
15.2 [No change]
15.3 [No change]
15.4 [No change]
15.5 [Deleted]
15.6 [No change]

RULE 16*bis*

Advancing Fees by the International Bureau

16*bis*.1 *Guarantee by the International Bureau*

(a) Where, by the time they are due under Rule 14.1(b), Rule 15.4(a) or (c) and Rule 16.1(f), the receiving Office finds that in respect of an international application no fees were paid to it by the applicant, or that the amount paid to it by the applicant is less than what is necessary to cover the transmittal fee, the basic fee and the search fee, the receiving Office shall charge the amount required to cover those fees, or the missing part thereof, to the International Bureau and shall consider the said amount as if it had been paid by the applicant at the due time.

(b) Where, by the time it or they are under Rule 15.4(b) or (c), the receiving Office finds that in respect of an international application the payment made by the applicant is insufficient to cover the designation fees necessary to cover all the designations, the receiving Office shall charge the amount required to cover those fees to the International Bureau and shall consider that amount as if it had been paid by the applicant at the due time.

(c) The International Bureau shall transfer from time to time to each receiving Office an amount which is expected to be necessary for covering any charges that the receiving Office has to make under paragraphs (a) and (b). The amount and the time of such transfers shall be determined by each receiving Office according to its own wish. The charging of any amount under paragraphs (a) and (b) shall not require any advance notice to, or any agreement by, the International Bureau.

(d) Each month, the receiving Office shall inform the International Bureau of the charges, if any, made under paragraphs (a) and (b).

16*bis*.2 *Obligations of the Applicant*

(a) The International Bureau shall promptly notify the applicant of any amount by which it was charged under Rule 16*bis*.1(a) and (b) and shall invite him to pay it, within one month from the date of the notification, the said amount augmented by a surcharge of 50%, provided that the surcharge will not be less, and will not be more, than the amounts indicated in the Schedule of Fees. The notification may refer to the charges made both under Rule 16*bis*.1(a) and (b) or, at the discretion of the International Bureau, there may be two separate notifications, one referring to charges made under Rule 16*bis*.1(a), the other referring to charges made under Rule 16*bis*.1(b).

(b) If the applicant fails to pay, within the said time limit, to the International Bureau the amount claimed, or pays less than what is needed to cover the transmittal fee, the basic fee, the search fee, one designation fee and the surcharge, the International Bureau shall notify the receiving Office accordingly and the receiving Office shall declare the international application withdrawn under Article 14(3)(a) and the receiving Office and the International Bureau shall proceed as provided in Rule 29.

(c) If the applicant pays, within the said time limit, to the International Bureau an amount which is more than what is needed to cover the fees and surcharge referred to in paragraph (b) but less than what is needed to cover all the designations maintained, the International Bureau shall notify the receiving Office accordingly and the receiving Office shall apply the amount paid in excess of what is needed to cover the fees and surcharge referred to in paragraph (b) in an order which shall be established as follows:

(i) where the applicant indicates to which designation or designations the amount is to be applied, it shall be applied accordingly but, if the amount received is insufficient to cover the designations indicated, it shall be applied to as many designations as are covered by it in the order chosen by the applicant in indicating the designations;

(ii) to the extent that the applicant has not given the indications under item (i), the amount or the balance thereof shall be applied to the designations in the order in which they appear in the international application;

(iii) where the designation of a State is for the purposes of a regional patent and provided that the required designation fee is, under the preceding provisions, available for that designation, the designation of any further States for which the same regional patent is sought shall be considered as covered by that fee.

The receiving Office shall declare any designation not covered by the amount paid withdrawn under Article 14(3)(b) and the receiving Office and the International Bureau shall proceed as provided in Rule 29.

(d) The receiving Office shall not return to the International Bureau any amount that it has charged to that Bureau for covering the transmittal fee.

(e) Where the international application is considered withdrawn, any amount charged to the International Bureau, other than the amount needed to cover the transmittal fee and the search fee transferred by the receiving Office to the International Searching Authority, shall be returned by the receiving Office to the International Bureau.

(f) Where the international application is considered withdrawn, any search fee charged by the receiving Office and transferred to the International Searching Authority shall be transferred by that Authority to the International Bureau unless the said Authority has already started the international search.

(g) Where paragraph (c) applies, the amount charged by the receiving Office to the International Bureau for designations which, as a consequence of the application of the order under that paragraph, are not maintained, shall be returned to the International Bureau by the receiving Office.

16*bis*.3 *Notifications*

(a) Any receiving Office may exclude the application of Rules 16*bis*.1 and 16*bis*.2 by a written notification to that effect given to the International Bureau by September 1, 1980. Such notification may be withdrawn at any time. The International Bureau shall publish all such notifications and withdrawals in the Gazette.

(b) Former Rule 15.5* remains applicable in respect of any receiving Office giving a notification under paragraph (a).

* Former Rule 15.5 *Partial Payment*

(a) Where the amount of the international fee received by the receiving Office is not less than that of the basic fee and at least one designation fee but less than the amount required to cover the basic fee and all the designations made in the international application, the amount received shall be applied as follows:

(i) to cover the basic fee, and

(ii) to cover as many designation fees as, after deduction of the basic fee may be covered in full by the amount received in the order indicated in paragraph (b).

(b) The order in which the said amount shall be applied to the designations shall be established as follows:

(i) where the applicant indicates to which designation or designations the amount is to be applied, it shall be applied accordingly but, if the amount received is insufficient to cover the designations indicated, it shall be applied to as many designations as are covered by it in the order chosen by the applicant in indicating the designations;

(ii) to the extent that the applicant has not given the indications under item (i), the amount or the balance thereof shall be applied to the designations in the order in which they appear in the international application;

(iii) where the designation of a State is for the purposes of a regional patent and provided that the required designation fee is, under the preceding provisions, available for that designation, the designation of any further States for which the same regional patent is sought shall be considered as covered by that fee.

RULE 17

The Priority Document

17.1 *Obligation to Submit Copy of Earlier National Application*

(a) Where the priority of an earlier national application is claimed under Article 8 in the international application, a copy of the said national application, certified by the authority with which it was filed ("the priority document"), shall, unless already filed with the receiving Office together with the international application, be submitted by the applicant to the International Bureau or to the receiving Office not later than 16 months after the priority date or, in the case referred to in Article 23(2), not later than at the time the processing or examination is requested. Where submitted to the receiving Office, the priority document shall be transmitted by that Office to the International Bureau together with the record copy or promptly after having been received by that Office. In the latter case, the receiving Office shall indicate to the International Bureau the date on which it received the priority document.

(b) Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to transmit the priority document to the International Bureau. Such request shall be made not later than the expiration of the applicable time limit referred to under paragraph (a) and may be subjected by the receiving Office to the payment of a fee. The receiving Office shall, promptly after receipt of such request, and, where applicable, the payment of such fee, transmit the priority document to the International Bureau with an indication of the date of receipt of such request.

(c) If the requirements of neither of the two preceding paragraphs are complied with, any designated State may disregard the priority claim.

(d) The International Bureau shall record the date on which the priority document has been received by it or by the receiving Office. Where applicable the date of receipt by the receiving Office of a request referred to under paragraph (b) shall be recorded as the date of receipt of the priority document. The International Bureau shall notify the applicant and the designated Offices accordingly.

17.2 [No change]

RULE 18

The Applicant

18.1 [No change]
18.2 [No change]
18.3 [No change]
18.4 [No change]
18.5 [Deleted]

RULE 19

The Competent Receiving Office

19.1 [No change]

19.2 *Several Applicants*

If there are several applicants, the requirements of Rule 19.1 shall be considered to be met if the national Office with which the international application is filed is the national Office of or acting for a Contracting State of which at least one of the applicants is a resident or national.

19.3 [No change]

RULE 20

Receipt of the International Application

20.1 [No change]
20.2 [No change]
20.3 [No change]

20.3*bis* *Manner of Carrying Out Corrections*

The Administrative Instructions prescribe the manner in which corrections required under Article 11(2)(a) shall be presented by the applicant and the manner in which they shall be entered in the file of the international application.

20.4 [No change]
20.5 [No change]
20.6 [No change]
20.7 [No change]
20.8 [No change]
20.9 [No change]

RULE 22

Transmittal of the Record Copy

22.1 [No change]
22.2 [No change]
22.3 [No change]
22.4 [No change]

22.5 *Documents Filed with the International Application*

Any power of attorney and any priority document filed with the international application referred to in Rule 3.3(a)(ii) shall accompany the record copy; any other document referred to in that Rule shall be sent only at the specific request of the International Bureau. If any document referred to in Rule 3.3(a)(ii) which is indicated in the check list as accompanying the international application is not, in fact, filed at the latest by the time the record copy leaves the receiving Office, that Office shall so note on the check list and the said indication shall be considered as if it had not been made.

RULE 30

Time Limit Under Article 14(4)

30.1 *Time Limit*

The time limit referred to in Article 14(4) shall be 4 months from the international filing date.

RULE 41

Earlier Search other than International Search

11.1 *Obligation to Use Results: Refund of Fee*

If reference has been made in the request, in the form provided for in Rule 4.11, to an international-type search carried out under the conditions set out in Article 15(5) or to a search other than an international or international-type search, the International Searching Authority shall, to the extent possible, use the results of the said search in establishing the international search report on the international application. The International Searching Authority shall refund the search fee, to the extent and under the conditions provided for in the agreement under Article 16(3)(b) or in a communication addressed to and published in the Gazette by the International Bureau, if the international search report could wholly or partly be based on the results of the said search.

RULE 46

Amendment of Claims Before the International Bureau

46.1 [No change]

46.2 *Dating of Amendments*

The date of filing of any amendment shall be recorded by the International Bureau, which shall also notify the applicant of the date and indicate the date in any publication or copy issued by it.

46.3 [No change]
46.4 [No change]

RULE 47

Communication to Designated Offices

47.1 *Procedure*

(a) [No change]
(b) [No change]
(c) The International Bureau shall send a notice to the applicant indicating the designated Offices to which the communication has been effected and the date of such communication. Such notice shall be sent on the same day as the communication. Each designated Office shall be informed, separately from the communication, about the sending and the date of mailing of the notice. The notice shall be accepted by all designated Offices as conclusive evidence that the communication has duly taken place on the date specified in the notice.
(d) [No change]
(e) [No change]

47.2 [No change]
47.3 [No change]

RULE 49

Languages of Translations and Amounts of Fees under Article 22(1) and (2)

49.1 [No change]
49.2 [No change]

49.3 *Statements under Article 19; Indications under Rule 13bis.4*

For the purposes of Article 22 and the present Rule, any statement made under Article 19(1) and any indication furnished under Rule 13*bis*.4 shall be considered part of the international application.

The Applicant Entitled to Make a Demand

54.1 [No change]
54.2 [No change]
54.3 [No change]
54.4 [Deleted]

RULE 55

Languages (International Preliminary Examination)

55.1 *The Demand*

The demand shall be in the language of the international application or, when a translation is required under Rule 55.2, in the language of that translation, provided that the International Preliminary Examining Authority may permit the demand to be in any language specified in the agreement concluded between the International Bureau and that Authority.

55.2 [No change]

RULE 57

The Handling Fee

57.1 [No change]
57.2 [No change]
57.3 [No change]

57.4 *Failure to Pay (Handling Fee)*

(a) [No change]
(b) If the applicant complies with the invitation within the one-month time limit, the handling fee shall be considered as if it had been paid on the due date.
(c) [No change]

57.5 *Failure to Pay (Supplement to the Handling Fee)*

(a) [No change]
(b) If the applicant complies with the invitation within the one-month time limit, the supplement to the handling fee shall be considered as if it had been paid on the due date.
(c) [No change]

57.6 [No change]

RULE 60

Certain Defects in the Demand or Elections

60.1 *Defects in the Demand*

(a) [No change]
(b) If the applicant complies with the invitation within the prescribed time limit, the demand shall be considered as if it had been received on the actual filing date, provided that the demand as submitted contained at least one election and permitted the international application to be identified; otherwise, the demand shall be considered as if it had been received on the date on which the International Preliminary Examining Authority receives the correction.
(c) [No change]
(d) [No change]

60.2 *Defects in Later Elections*

(a) [No change]
(b) If the applicant complies with the invitation within the prescribed time limit, the later election shall be considered as if it had been received on the actual filing date, provided that the later election as submitted contained at least one election and permitted the international application to be identified; otherwise, the later election shall be considered as if it had been received on the date on which the International Bureau receives the correction.
(c) [No change]

60.3 [No change]

RULE 76

Languages of Translations and Amounts of Fees under Article 39(1); Translation of Priority Document

76.1 [No change]
76.2 [No change]

76.3 *Statements under Article 19; Indications under Rule 13bis.4*

For the purposes of Article 39 and the present Rule, any statement made under Article 19(1) and any indication furnished under Rule 13*bis*.4 shall be considered part of the international application.

76.4 [No change]

RULE 80

Computation of Time Limits

80.1 [No change]

80.2 [No change]

80.3 [No change]

80.4 [No change]

80.5 [No change]

80.6 *Date of Documents*

(a) Where a period starts on the day of the date of a document or letter emanating from a national Office or intergovernmental organization, any interested party may prove that the said document or letter was mailed on a day later than the date it bears, in which case the date of actual mailing shall, for the purposes of computing the period, be considered to be the date on which the period starts. Irrespective of the date on which such a document or letter was mailed, if the applicant offers to the national Office or intergovernmental organization evidence which satisfies the national Office or intergovernmental organization that the document or letter was received more than 7 days after the date it bears, the national Office or intergovernmental organization shall treat the period starting from the date of the document or letter as expiring later by an additional number of days which is equal to the number of days which the document or letter was received later than 7 days after the date it bears.

(b) Any receiving Office may exclude the application of paragraph (a) by a written notification to that effect given to the International Bureau by September 1, 1980. Such notification may be withdrawn at any time. The International Bureau shall publish all such notifications and withdrawals in the Gazette.

80.7 [No change]

RULE 90

Representation

90.1 [No change]

90.2 [No change]

90.3 *Appointment*

(a) Appointment of any agent, or of any common representative within the meaning of Rule 4.8(a), shall be effected by each applicant, at his choice, either by signing the request in which the agent or common representative is designated or by a separate power of attorney (i.e., a document appointing an agent or common representative).

(b) [No change]

(c) [No change]

(d) A general power of attorney may be deposited with the receiving Office for purposes of the processing of the international application as defined in Rule 90.2(d). Reference may be made in the request to such general power of attorney, provided that a copy thereof is attached to the request by the applicant.

90.4 [No change]

RULE 91

Obvious Errors of Transcription

91.1 [No change]

91.2 *Manner of Carrying Out Rectifications*

The Administrative Instructions prescribe the manner in which rectifications of obvious errors of transcription shall be made and the manner in which they shall be entered in the file of the international application.

RULE 92

Correspondence

92.1 *Need for Letter and for Signature*

(a) [No change]

(b) If the requirements provided for in paragraph (a) are not complied with, the applicant shall be informed as to the non-compliance and invited to remedy the omission within a time limit fixed in the invitation. The time limit so fixed shall be reasonable in the circumstances; even where the time limit so fixed expires later than the time limit applying to the furnishing of the paper (or even if the latter time limit has already expired), it shall not be less than 10 days and not more than one month from the mailing of the invitation. If the omission is remedied within the time limit fixed in the invitation, the omission shall be disregarded; otherwise, the applicant shall be informed that the paper has been disregarded.

(c) Where non-compliance with the requirements provided for in paragraph (a) has been overlooked and the paper taken into account in the international procedure, the non-compliance shall be disregarded.

92.2 [No change]

92.3 [No change]

92.4 *Use of Telegraph, Teleprinter, etc.*

(a) Notwithstanding the provisions of Rules 11.14 and 92.1(a), but subject to paragraph (b), below, any document (including any drawing) subsequent to the international application may be sent by telegraph or teleprinter or other like means of communication producing a printed or written document. Any such document so sent shall be considered to have been submitted in a form complying with the requirements of the said Rules on the day on which it was communicated by the means mentioned above, provided that, within 14 days after being so communicated, its contents are furnished in that form; otherwise, the telegraphic, teleprinter or other communication shall be considered not to have been made.

(b) Each national Office or intergovernmental organization shall promptly notify the International Bureau of any means referred to in paragraph (a) by which it is prepared to receive documents referred to in that paragraph. The International Bureau shall publish the information so received in the Gazette as well as information concerning the means referred to in paragraph (a) by which the International Bureau is prepared to receive any such document. Paragraph (a) shall apply with respect to any national Office or intergovernmental organization only to the extent the said information has been so published with respect to it. The International Bureau shall publish, from time to time, in the Gazette, changes in the information previously published.

RULE 92*bis*

Changes in Certain Indications in the Request or the Demand

92*bis*.1 *Recording of Changes by the International Bureau*

The International Bureau shall, on the request of the applicant or the receiving Office, record changes in the following indications appearing in the request or demand:

(i) person, name, residence, nationality or address of the applicant,

(ii) person, name or address of the agent, the common representative or the inventor.

92*bis*.2 *Notifications*

(a) The International Bureau shall give notifications concerning changes recorded by it:

(i) to the receiving Office where the change has been recorded on the request of the applicant,

(ii) as long as the international search report or the declaration referred to in Article 17(2) has not yet issued, to the International Searching Authority,

(iii) until the expiration of the time limit referred to in Article 22(1), to the designated Offices,

(iv) as long as the international preliminary examination report has not yet issued, to the International Preliminary Examining Authority,

(v) until the expiration of the time limit referred to in Article 39(1)(a), to the elected Offices.

(b) A copy of each notification sent under paragraph (a) shall be sent to the applicant by the International Bureau.

SCHEDULE OF FEES

Fees	*Amounts*
1. Basic Fee: (Rule 15.2(a)) if the international application contains not more than 30 sheets	325 Swiss francs

if the international application contains more than 30 sheets	325 Swiss francs plus 6 Swiss francs for each sheet in excess of 30 sheets
2. Designation Fee: (Rule 15.2(a))	78 Swiss francs
3. Handling Fee: (Rule 57.2(a))	100 Swiss francs
4. Supplement to the Handling Fee: (Rule 57.2(b))	100 Swiss francs
Surcharges	
5. Surcharge for late payment: (Rule 16*bis*.2(a))	Minimum: 200 Swiss francs Maximum: 500 Swiss francs

* * * * *

Changes in the Administrative Instructions.

SECTION 106

Common Agent for Several Applicants

(a) [Existing text of Section 106]

(b) Where the international application is filed with reference to a general power of attorney not signed by all the applicants, it shall be sufficient for the purpose of appointment of a common agent under Rule 90.3, if the request or a separate power of attorney is signed by the applicant, who did not sign the general power of attorney.

SECTION 111

Changes in Certain Indications in the Request and the Demand

Any request for the recording of any changes referred to under Rule 92*bis* shall be signed by the applicant or, if the receiving Office requested such change, by the receiving Office. The request shall clearly identify the indications the change of which is requested.

SECTION 204

Headings of the Parts of the Description

The headings referred to in Rule 5.1(c) should be as follows:

(i) for matter referred to in Rule 5.1(a)(i), "Technical Field;"

(ii) for matter referred to in Rule 5.1(a)(ii), "Background Art;"

(iii) for matter referred to in Rule 5.1(a)(iii), "Disclosure of Invention;"

(iv) for matter referred to in Rule 5.1(a)(iv), "Brief Description of Drawings;"

(v) for matter referred to in Rule 5.1(a)(v), "Best Mode for Carrying Out the Invention," or, where appropriate, "Mode(s) for Carrying Out the Invention;"

(vi) for matter referred to in Rule 5.1(a)(vi), "Industrial Applicability."

SECTION 205

Numbering of Claims Upon Amendment

(a) Any claim submitted after the filing date of the international application and which is not identical with the claims previously appearing in the international application shall, at the choice of the applicant, be submitted either:

(i) as an amended claim, in which case, it shall bear the same number as the previous claim it amends; that number shall be followed by the word "(amended)" or its equivalent in the language of the international application; or

(ii) as a new claim, in which case it shall bear the next number after the highest previously numbered claim; that number shall be followed by the word "(new)" or its equivalent in the language of the international application; where the consecutive order of claims requires that a new claim be given a number lower than the highest previously numbered claim, the claims following the new claim shall be renumbered; any new number shall be followed by the words "(Original claim No.)" or an equivalent of these words in the language of the international application and an indication of the original number of the renumbered claim.

(b) [No change]

SECTION 306

[Deleted]

ANNEX F TO THE ADMINISTRATIVE INSTRUCTIONS FORMS

Form PCT/RO/101 (Request and Fee Calculation Sheet): page 3 of this form, Was modified.

Form PCT/ISA/210 (International Search Report): an additional (optional) sheet for this form called "(Extra Sheet)" is provided.

[998 OG 24]

(94)

Increase in PCT Fees and Changes in PCT Rules Effective in International Applications Filed After January 1, 1981

The sixth session of the Assembly of the International Patent Cooperation Treaty (PCT) Union was held in Geneva, Switzerland from September 22 to 26, 1980. This meeting adopted several changes in the PCT Rules and increased the amounts of the International Basic and Designation fees due in international applications filed after January 1, 1981.

The amounts of the fees charged in international applications filed after January 1, 1981 will be as follows:

Transmittal Fee—$35.00 (no change).

Transmittal Fee—$35.00 (no change).

International Basic Fee: For first 30 sheets of international applications—$265.00 (revised).

Basic Supplemental Fee: For each sheet over 30–$5.00 (revised).

International Designation Fee: For State for which a national patent is sought or group of States for which the same regional patent is sought—$64.00 (revised).

The above revised amounts are the U.S. dollar equivalent amounts of the fees fixed in Swiss francs in "Schedule of Fees" using the exchange rate of September 22, 1980.

LIST OF PCT MEMBER STATES AS OF NOVEMBER 1, 1980

State	*Ratification of Accession*	*Date of Ratification or Accession*	*Date From Which State May Be Designated*
(1) Central African Empire*	Accession	15 September 1971	01 June 1978
(2) Senegal*	Ratification	08 March 1972	01 June 1978
(3) Madagascar	Ratification	27 March 1972	01 June 1978
(4) Malawi	Accession	16 May 1972	01 June 1978
(5) Cameroon*	Accession	15 March 1973	01 June 1978
(6) Chad*	Accession	12 February 1974	01 June 1978
(7) Togo*	Ratification	28 January 1975	01 June 1978
(8) Gabon*	Accession	06 March 1975	01 June 1978
(9) United States of America	Ratification	26 November 1975	01 June 1978
(10) Germany, Federal Republic of**	Ratification	19 July 1976	01 June 1978
(11) Congo*	Accession	08 August 1977	01 June 1978
(12) Switzerland**	Ratification	14 September 1977	01 June 1978
(13) United Kingdom**	Ratification	24 October 1977	01 June 1978
(14) France**	Ratification	25 November 1977	01 June 1978
(15) Soviet Union	Ratification	29 December 1977	01 June 1978
(16) Brazil	Ratification	09 January 1978	01 June 1978
(17) Luxembourg**	Ratification	31 January 1978	01 June 1978
(18) Sweden**	Ratification	17 February 1978	01 June 1978

LIST OF PCT MEMBER STATES AS OF NOVEMBER 1, 1980

(19) Japan	Ratification	01 July 1978	01 October 1978
(20) Denmark	Ratification	01 September 1978	01 December 1978
(21) Austria**	Ratification	23 January 1979	23 April 1979
(22) Monaco	Ratification	22 March 1979	22 June 1979
(23) Netherlands**	Ratification	10 April 1979	10 July 1979
(24) Romania	Accession	23 April 1979	23 July 1979
(25) Norway	Ratification	01 October 1979	01 January 1980
(26) Liechtenstein**	Accession	19 December 1979	19 March 1980
(27) Australia	Accession	31 December 1979	31 March 1980
(28) Hungary	Ratification	27 March 1980	27 June 1980
(29) Democratic People's Republic of Korea (North Korea)	Accession	08 April 1980	08 July 1980
(30) Finland	Ratification	01 July 1980	01 October 1980

*Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI member states. A designation of any state is an indication that all OAPI states have been designated. Note: only one designation fee is due regardless of the number of OAPI member states designated.

**Members of European Patent Convention (EPC) regional patent system. Either national patents or European patents for members States are available through PCT, *except for France*, for which only European patents are available if PCT is used. If regional protection is desired for one or more States, the indication "regional patent" must follow the designation of the State or States. Note: only one designation fee is due if the regional patent protection is sought for several States.

Amended PCT Rule 22 provides 15 months, rather than the earlier 14 months, from the priority date for transmitting a copy of the Record Copy to the International Bureau. This change is effective January 1, 1981.

The amendment to PCT Rule 80.6(b) merely clarifies a change made by the fifth PCT Assembly. This change entered into effect on October 1, 1980.

PCT Rule 82 concerning irregularities in the mail service has been amended to apply to the transmittal of the Record Copy by the Receiving Office or applicant to the International Bureau. This change becomes effective on January 1, 1981.

RULE 22

Transmittal of the Record Copy

22.1 [No change]

22.2 *Alternative Procedure*

(a) [No change]
(b) [No change]
(c) [No change]
(d) [No change]
(e) Where the receiving Office does not hold the record copy at the disposal of the applicant by the date fixed in paragraph (d), or where, after having asked for the record copy to be mailed to him, the applicant has not received that copy at least 10 days before the expiration of 13 months from the priority date, the applicant may transmit a copy of his international application to the International Bureau. This copy ("provisional record copy") shall be replaced by the record copy or, if the record copy has been lost, by a substitute record copy certified by the receiving Office on the basis of the home copy, as soon as practicable and, in any case, before the expiration of 15 months from the priority date.

22.3 *Time Limit under Article 12(3)*

(a) The time limit referred to in Article 12(3) shall be:
(i) where the procedure under Rule 22.1 or Rule 22.2(c) applies, 15 months from the priority date;
(ii) where the procedure under Rule 22.2(d) applies, 14 months from the priority date, except that, where a provisional record copy is filed under Rule 22.2(e), it shall be 14 months from the priority date for the filing of the provisional record copy, and 15 months from the priority date for the filing of the record copy.
(b) [Deleted]

22.4 [No change]
22.5 [No change]

RULE 80

Computation of Time Limits

80.1 [No change]
80.2 [No change]
80.3 [No change]
80.4 [No change]
80.5 [No change]

80.6 *Date of Documents*

(a) [No change]
(b) Any receiving Office may exclude the application of the second sentence of paragraph (a) by a written notification to that effect given to the International Bureau by September 1, 1980. Such notification may be withdrawn at any time. The International Bureau shall publish all such notifications and withdrawals in the Gazette.

80.7 [No change]

RULE 82

Irregularities in the Mail Service

82.1 *Delay or Loss in Mail*

(a) Any interested party may offer evidence that he has mailed the document or better 5 days prior to the expiration of the time limit. Except in cases where surface mail normally arrives at its destination within 2 days of mailing, or where no airmail service is available, such evidence may be offered only if the mailing was by airmail. In any case, evidence may be offered only if the mailing was by mail registered by the postal authorities.
(b) [No change]
(c) [No change]

82.2 *Interruption in the Mail Service*

(a) Any interested party may offer evidence that on any of the 10 days preceding the day of expiration of the time limit the postal service was interrupted on account of war, revolution, civil disorder, strike, natural calamity, or other like reason, in the locality where the interested party resides or has his place of business or is staying.
(b) [No change]

SCHEDULE OF FEES; PRICES OF PUBLICATIONS

Basic Fee:

(Rule 15.2(a)):

If the international application, contains not more than 30 sheets—432 Swiss francs.
If the international application contains more than 30 sheets—432 Swiss francs (plus 8 Swiss francs for each sheet in excess of 30 sheets).

Designation Fee:

(Rule 15.2(a))—104 Swiss francs.

Handling Fee:

(Rule 57.2(a))—133 Swiss francs.

Supplement to the Handling Fee:

(Rule 57.2(b))—133 Swiss francs.

Surcharges:

(Rule 16*bis*.2(a)) surcharges for late payment—minimum: 200 Swiss francs; maximum: 500 Swiss francs.

Price of the Subscription to the PCT Gazette—400 Swiss francs.

Sales Price of Each Copy of the Pamphlet—8 Swiss francs.

LUTRELLE PARKER,
Acting Commissioner of Patents and Trademarks.

Date: Nov. 17, 1980.

[1001 O.G. 14]

(95) Reduction of European Search Fee for PCT Cases

The following letter dated December 21, 1979 from Dr. J. B. van Benthem, the President of the European Patent

Office, was received by the Commissioner of Patents and Trademarks and is being published to provide the information to applicants using the Patent Cooperation Treaty (PCT). The effect of the decision of the Administration Council of the European Patent Organization is to reduce the search fee required by the European Patent Office by 20% if the application was filed under the PCT and was searched by the United States Patent and Trademark Office acting as an International Searching Authority.

The letter and accompanying annex are reproduced below.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

"Dear Mr. Diamond:

Pursuant to Article 157, paragraph 3, EPC, the Administrative Council of the European Patent Organization is entitled to decide under what conditions and to what extent:

a) the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with

b) the search fee as provided for in Article 157, paragraph 2b, EPC is to be reduced.

Up to the present, the Administrative Council of the EPO has taken decisions in regard to Article 157, paragraph 3, in respect of international applications for which the international search report has been drawn up by the following Offices: the European Patent Office, the Swedish Patent Office, the Austrian Patent Office, the United States Patent and Trademark Office, the Japanese Patent Office and the USSR State Committee for Inventions and Discoveries.

The decisions concerning the Swedish and Austrian Patent Offices are based on the agreements concluded between these Offices and the EPO pursuant to Section III, paragraph 2 and Section IV, paragraph 2 of the Protocol on the Centralisation of the European Patent System, which is an integral part of the EPC. These agreements prescribe that the searches to be carried out by these Offices are to meet the same criteria and be of the same standard as applied at the EPO.

For these reasons the Administrative Council has decided that in respect of Sweden and Austria the supplementary European search report under Article 157, paragraph 2a, EPC is to be dispensed with and a search fee as provided for in Article 157, paragraph 2b, EPC shall not be charged.

As far as those States are concerned which are not members of the European Patent Organization, the Administrative Council of the EPO decided on 14 September 1979, that the search fee provided for in Article 157, paragraph 2b, EPC, shall be reduced by one-fifth in the case of international applications on which an international search report has been drawn up by the United States Patent and Trademark Office, the Japanese Patent Office or the USSR State Committee for Inventions and Discoveries. This reduction reflects the economy expected to be made in drawing up the supplementary European search report according to EPO standards.

Annexed you will find a copy of the Decision of 14 September 1979. It applies to all international applications filed since 1 June 1979.

Yours sincerely,

J. B. Van Benthem,
(President)."

ANNEX

The Administrative Council of the European Patent Organization

Having regard to the European Patent Convention (hereinafter called "the Convention"), and in particular Article 157, paragraph 3, thereof,

Has decided as follows:

ARTICLE 1

The search fee provided for in Article 157, paragraph 2(b), of the Convention shall be reduced by one fifth in the case of international applications on which an international search report has been drawn up by the United States Patent and Trademark Office, the Japanese Patent Office or the USSR State Committee for Inventions and Discoveries.

ARTICLE 2

This decision shall enter into force on 14 September 1979. It shall apply to all international applications filed since 1 June 1978.

Done at Berlin, 14 September 1979.

For the Administrative Council
The Chairman,
G. VIANES.

END OF ANNEX

[992 O.G. 2]

TRADEMARK NOTICES

(96) INTERVIEWS INVOLVING TRADEMARK APPLICATION

Interviews frequently result in a better understanding of the issues involved, shorten the prosecution and facilitate disposal of applications.

Interviews for discussion of registrability of the [illegible]k of a pending application will not be had before the fir[illegible]cial Office action thereon and ordinarily not before filing [illegible]t response. Arrangements for an interview should be ma[illegible] advance so that the Examiner may review the ca[illegible] and be familiar with the details involved.

Interviews on Friday will no longer be prohibited as a matter of policy but all interviews should be set at a time satisfactory to all parties concerned.

A memorandum summarizing the conclusions reached at the interview should be prepared by the Examiner and placed in the application file. The memorandum will be retained in the application file until the prosecution is completed. Such procedure will not, however, relieve the applicant of the responsibility of complying with the requirements of Trademark Rule 2.62.

HORACE B. FAY, JR.,
July 6, 1964. *Assistant Commissioner.*

This supersedes the notice of February 10, 1958, 728 O.G. (TM 1).

[804 O.G. TM 147 (July 28, 1964)]

(97) POWERS OF ATTORNEY IN REGISTERED TRADEMARK FILES

On and after February 1, 1967, communications advising of changes in the powers of attorney for registered trademarks will be placed in the registration files, but will not be acknowledged by the Patent Office. The information will thus be available to those who inspect the files, but since these powers of attorney do not directly concern the Patent Office, acknowledgments are not believed to be necessary.

C. M. WENDT,
Jan. 30, 1967. *Director.*

[835 O.G. TM 95 (Feb. 21, 1967)]

(98) PREFACE TO THE TRADEMARK O.G. NOTICES

In September 1970, a Public Advisory Committee for Trademark Affairs was established by the Secretary of Commerce. The Purpose of this Committee was to advise the Patent Office on ways to increase the efficiency and effectiveness of the administration of the Trademark Act. A report of this Advisory Committee has been received by the Commissioner of Patents. After reviewing the recommendations, although the review is not complete, it has been decided to make certain changes in trademark practice and procedure, and to propose changes in the rules of practice. Beginning with this issue of the OFFICIAL GAZETTE and in subsequent issues as needed, announcements will be published concerning changes in procedures and proposed amendments to the Trademark Rules of Practice.

* * * * *

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13232; July 16, 1971

[889 O.G. TM 2 (Aug. 3, 1971)]

(99) REQUEST FOR EXTENSION OF TIME IN WHICH TO OPPOSE

The Patent Office is adopting a new procedure to be used when filing a request for an extension of time in which to oppose under Section 13 of the Trademark Act and Rule 2.102, Trademark Rules of Practice. All requests for extension of time should be submitted in triplicate. The Patent Office will stamp each copy of the request with the action taken and send a copy to the requester and the applicant. The third copy will be entered in the file.

The purpose of this new procedure is to expedite the handling of extensions of time by eliminating the preparation of a formal notice of the disposition of the request. Further,

this procedure will provide the applicant with additional information concerning the potential opposition.

WILLIAM E. SCHUYLER, JR.,
June 16, 1971. *Commissioner of Patents.*

Published in 36 F.R. 13232; July 16, 1971

[889 O.G. TM 3 (Aug. 3, 1971)]

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(100) INITIAL PROCESSING OF APPLICATION

On February 1, 1972, the operations of the Trademark Application Section of the Patent Office will be reorganized. The purpose of the reorganization is to provide the public and applicants with more current information concerning newly filed applications.

The prompt initial processing of trademark applications is necessary in order to fulfill one of the main Patent Office functions, that of producing a record, accessible to the public, of new trademark activity to facilitate the clearance of new marks for use, determine the registrability of proposed marks, and avoid conflicts with the rights of others. In order to maintain a record of marks applied for which reflects the most current information available to the Office concerning them, the early processing of drawings in order to have them placed in the search room is considered as a first priority. The processing of these drawings includes the assignment of serial numbers, initial classification, duplication of the drawing and the forwarding of copies of the drawing to the search room. Other functions which are necessary in the processing of applications, such as the processing and mailing of filing receipts, are secondary to the processing of drawings.

In past years, there have been delays in processing applications and forwarding application drawings to the search room. These delays have varied from several weeks to several months. In view of the importance, both to applicants and the public, of recording essential information concerning newly filed applications as quickly as possible, a reorganization of the workflow in the Application Section is being effected.

There is no change in the processing of applications through the mail room and finance branch to the Application Section. However, under the new plan, upon receipt in the Trademark Application Section, all applications will be stamped with a serial number, and the drawing of the mark will be reproduced immediately and placed in the search file. This processing will occur as soon as the application files reach the Application Section. Such procedures as determining whether or not an application will receive a filing date, preparation of the file jackets, and mailing of the filing receipt will take place at a later time.

Applicants who wish to be notified promptly of the date their papers were received in the office and their serial number, may send two self-addressed postcards with their application papers. The mail room will stamp both postcards with the date of receipt and return one to the applicant; the second postcard will be stamped with the serial number and forwarded to the applicant from the Application Section. The postcards should contain the applicant's name and the trademark which is the subject of the application. When more than one set of application papers are forwarded under one cover, postcards should be attached to each set of papers for which a receipt is desired.

Under the new system of processing application papers, your particular attention is directed to the following changes as compared to the present procedure.

1. Application drawings will be placed in the public search file prior to the mailing of the filing receipt.

2. By using the postcard system described above, applicants will be notified sooner of the date of receipt of their papers and the serial number of their application. Applicants are encouraged to use the postcard system.

3. Additional papers sent in by the applicant or attorney should be identified by serial number, thereby enabling the office to process these papers quickly.

4. When an application is accompanied by a petition to the Commissioner under § 2.146, the petition will not be considered until processing by the Application Section is complete.

Effective date. The procedure outlined in this notice will become effective February 1, 1972.

RICHARD A. WAHL,
Jan. 11, 1972. *Acting Commissioner of Patents.*

Approved:

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

Published in 37 FR 942; Jan. 21, 1972

[895 O.G. TM 193 (Feb. 22, 1972)]

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(101) PETITION TO MAKE TRADEMARK APPLICATIONS SPECIAL

The practice of expediting the prosecution of new trademark applications on request of the applicant (accelerated prosecution) was rescinded, effective Aug. 1, 1971 (36 F.R. 13231, July 16, 1971; 825 O.G. 2). This action was taken after a careful study of the practice, including a recommendation of the Public Advisory Committee for Trademark Affairs that the Patent Office terminate accelerated prosecution of trademark applications. The study considered both the effect of the procedure on the workload of the Trademark Operations and the broader interest of examining trademark applications in an order which is equitable to all applicants.

Since the termination of this practice, the Office has experienced some increase in the number of petitions requesting the Commissioner to invoke his supervisory authority pursuant to Rule 2.146 in order to advance the examination of applications out of their regular order. This was to be expected since applicants who might have been able to show special circumstances entitling them to advanced examination could previously achieve this special treatment without resorting to a petition. However, some of the petitions now being received are not considered sufficient to justify the extraordinary relief of invoking the supervisory authority of the Commissioner for the purpose of advancing the applications out of their regular order.

In particular, a number of such petitions have been based on the ground that the applicant is about to embark on an advertising campaign or to commit advertising or promotional expenditures in which the mark applied for is material. Such a ground is not considered to constitute appropriate circumstances justifying the advancement of the application out of its regular turn and the petitions based on such ground have been and will continue to be denied. The principal reason for the denial is that these circumstances are applicable to a substantial portion of the trademark applications filed in the Patent Office. The supervisory authority of the Commissioner should be exercised only where an extraordinary reason for such action has been disclosed. See *Anderson & Dyer* v. *Lowry*, 89 O.G. 1861, 1899 C.D. 230, and *Wilputte* v. *Van Ackeren*, 103 USPQ 235. Thus, the extraordinary remedy of invoking the supervisory authority of the Commissioner is not considered appropriate under these circumstances.

In the interest of equitable treatment of all applicants, the policy of the Office in granting such petitions will be restricted to those cases in which particular and very special circumstances exist, such as a demonstrable possibility of loss of substantial rights, rather than circumstances which would be equally applicable to a large number of other applicants for trademark registration.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Date: Mar. 13, 1972.

[897 O.G. TM 2 (Apr. 4, 1972)]

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(102) TRADEMARK REGISTRATION TREATY

At the conclusion of the Vienna Diplomatic Conference on industrial property, the Trademark Registration Treaty was signed on June 12, 1973 for the United States. This Treaty is designed to simplify the procedures for obtaining international registration of trademarks for United States companies doing business abroad.

The Treaty was unanimously adopted at the final plenary session. In addition to the United States, the United Kingdom, the Federal Republic of Germany, Italy, Portugal, Hungary, San Marino and Monaco also signed. Some forty-six countries were represented at the Conference. In their closing statements most of the other delegations present indi-

cated their hope to sign before the end of the year. The Treaty remains open for signature through December 31, 1973. The Treaty will enter into force six months after five States have deposited their instruments of ratification or accession.

The negotiations at Vienna represent the climax of the work of several committees of experts and working groups which have met at Geneva since 1970 with the assistance of the World Intellectual Property Organization (WIPO). The U.S. delegation to the Vienna Conference was composed of officials from the Department of State, the U.S. Patent Office and advisors from the private sector. Previous versions of the proposed Treaty were published on February 22, 1972; September 19, 1972; and February 20, 1973; in the OFFICIAL GAZETTE of the U.S. Patent Office. Published in this issue is the complete text of the Trademark Registration Treaty and its Regulations, as adopted by the Conference. For convenience, in addition to the text of the Articles and Regulations as adopted there is included a table of contents at the end of each section.

Additional copies of this material are available upon request to the Commissioner of Patents.

ROBERT GOTTSCHALK,
June 22, 1973 *Commissioner of Patents.*

[912 O.G. TM 205 (July 24, 1973)]

(103) REALIGNMENT OF PATENT OFFICE HANDLING OF OPPOSITION PAPERS

In order to increase efficiency in processing papers, all activities connected with the handling of oppositions have been transferred from the Trademark Examining Operation to the Trademark Trial and Appeal Board. As a result of the transfer, requests for extension of time to oppose and matters pertinent thereto are now received and processed by the staff of the Trademark Trial and Appeal Board rather than by the staff of the Office of the Director of the Trademark Examining Operation.

No substantial change in procedure in the handling of papers relative to oppositions and extensions of time is contemplated by this realignment of duties in the Patent Office. Reasonable requests for extensions of time to oppose will continue to be granted with liberality particularly if there is no protest by another party and if the parties are negotiating or otherwise exploring bases for settlement, and fees for both verified and unverified oppositions will continue to be required to be filed within the time prescribed for opposing.

RENE D. TEGTMEYER,
Nov. 14, 1974. *Assistant Commissioner for Trademarks.*

[929 O.G. TM 62 (Dec. 10, 1974)]

(104) CONFERENCE OF PARTIES IN TRADEMARK INTER PARTES PROCEEDINGS

Under the inter partes rules of procedure in trademark cases effective July 1, 1972 (898 O.G. TM 170, May 16, 1972), the interlocutory phases of trademark inter partes proceedings are becoming increasingly involved, and the experience of the Trademark Trial and Appeal Board has been that the difficulties in such proceedings can frequently be resolved more satisfactorily and quickly by conference in person than by correspondence or telephone. Therefore, effective immediately, the following practice is being adopted:

> Whenever it appears to the Trademark Trial and Appeal Board that questions or issues arising during the interlocutory phase of a trademark inter partes proceeding have become so complex that their resolution by correspondence or telephone is not practical and would be likely to be facilitated by conference in person of the parties and/or their attorneys with a member or members of the Trademark Trial and Appeal Board, the Board may at its discretion suggest that the parties and/or their attorneys, under circumstances which will not result in undue hardship for any party, meet with the Board at its offices in Crystal Plaza, Arlington, Virginia, to discuss the resolution of difficulties.

C. MARSHALL DANN,
Feb. 3, 1975. *Commissioner of Patents and Trademarks.*

[932 O.G. TM 2 (Mar. 4, 1975)]

(105) INTERNATIONAL PROTECTION OF GOVERNMENT EMBLEMS AND SEALS

Change of Intent

The Patent and Trademark Office, Department of Commerce, intends to forward only the 50 State seals plus one departmental seal for each department listed in the publication "Seals and Other Devices in Use at the Government Printing Office" ("Seals") instead of the entire publication, as indicated on page 59366 of the Federal Register of December 23, 1975.

Since the publication had been printed in 1975, it was assumed that few deletions and additions would be necessary. However, the response to the above notice, along with some necessary deletions, resulted in a large number of seals in the publication requiring deletion. This rendered the publication unacceptable for submission to the World Intellectual Property Organization (WIPO).

Therefore, the Patent and Trademark Office now intends to forward only the 50 State seals along with the departmental seal denoted "No. 1" for each department listed in the "Seals" publication. If this is not the preferred departmental or State seal, the department or State involved is requested to notify the Patent and Trademark Office by September 21, 1976. This notification should either specify the number of the preferred seal, as it appears in the "Seals" publication, or provide a clear, black and white photograph, suitable for reproduction, of the preferred seal. The seal must be no larger than 1½ inches in diameter.

These seals will then be forwarded to WIPO for protection under Article 6*ter* of the Paris Convention for the Protection of Industrial Property.

Address all correspondence to: Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Dated: August 18, 1976.

C. MARSHALL DANN,
Commissioner of Patents and Trademarks.

Published in 41 F.R. 35741

[950 O.G. TM 114 (Sept. 21, 1976)]

(106) TRADEMARK RULES OF PRACTICE

The ninth edition of the Trademark Rules of Practice, dated December 1976, is now available. It replaces the previous edition in its entirety.

The Rules are in looseleaf form so as to accommodate revisions. New subscriptions may be ordered from:

Superintendent of Documents
United States Government Printing Office
Washington, D.C. 20402.

The charge is $5.00 for domestic mailing and $6.25 for foreign mailing. Prior subscribers were sent a notice of expiration by the Government Printing Office in January, 1977.

The Rules booklet is available only by subscription. When revisions are issued, they are a part of the subscription and are mailed automatically. Revisions are announced in the OFFICIAL GAZETTE of the Patent and Trademark Office.

BERNARD A. MEANY,
Sept. 16, 1977. *Assistant Commissioner for Trademarks.*

[963 TMOG 12 (Oct. 18, 1977)]

(107) RECORDING OF "TERRITORIAL ASSIGNMENTS" IN THE ASSIGNMENT DIVISION OF THE PATENT AND TRADEMARK OFFICE

It has been the practice of the Assignment Division for many years to refuse to record "territorial assignments," that is, assignments purporting to transfer rights in a trademark registration (not a concurrent use registration) for less than the entire United States. Hereinafter, such documents will be recorded as long as the requirements of the Rules of Practice are met by the documents submitted.

The Office is not addressing the validity or effect of such documents by recording same, but is merely recognizing that such transfers may affect title to a registered mark and there-

fore ought to be recorded. At the time a Section 8 affidavit or declaration or an application for renewal is filed, the Examiner of Trademarks will consider the effect of such a document.

BERNARD A. MEANY,
Oct. 7, 1977. *Assistant Commissioner for Trademarks.*

[964 TMOG 8 (Nov. 8, 1977)]

(108) TRADEMARK RULE 2.165 REQUIREMENT WHERE A SECTION 8 AFFIDAVIT OF DECLARATION IS HELD INSUFFICIENT

Several recent Petitions to the Commissioner have indicated a failure on the part of registrants and their attorneys to follow the requirements of Trademark Rule 2.165. Therefore, reviewing certain basic elements of this rule is considered timely so as to alert registrants and attorneys to technical errors which might lead to the cancellation of a valuable trademark registration.

Part (a) of Rule 2.165 indicates that the examiner will notify the registrant when an affidavit or declaration of use under Section 8 of the Statute is insufficient and the reasons therefor. When the registrant wishes the examiner to reconsider the affidavit or declaration, or when the registrant has taken additional steps to rectify the deficiencies and desires to have the examiner reconsider the affidavit or declaration in light of those steps, the request for reconsideration must be submitted within 6 months of the date of mailing of the notice of insufficiency.

Note, however, that a supplemental or substitute affidavit or declaration required by Section 8 cannot be considered unless it is received before the expiration of the six year anniversary of the registration. Consequently, registrants should file their affidavits as early as possible during the sixth year following registration.

There are situations where correcting the deficiency in the affidavit or declaration requires recording an assignment with the Assignment Division of this Office. If the recording cannot be completed within 6 months, the registrant must at least repond to the examiner's notice of insufficiency within that period. The response must indicate the steps being taken to correct the deficiency. The examiner can then allow the registrant additional time or suspend action depending on the circumstances. Registrants must always observe the "six month response" period whenever responding to the examiner from an adverse action.

Part (b) of Rule 2.165 permits a registrant to request the Commissioner to review the action of the examiner when he is dissatisfied with that action. Review by the Commissioner should be sought only where it is believed that the examiner has erred in his action. In other words, the Commissioner's role is to review the correctness of the examiner's action and not to serve as an alter ego of the examiner before whom the registrant may seek to correct deficiencies.

When review by the Commissioner has been sought, the decision on that request constitutes the final action of the Patent and Trademark Office. If no review by the Commissioner is sought and if no request for reconsideration of an examiner's action is timely filed, the Commissioner will notify the registrant of the deficiency in the affidavit or declaration after the sixth year has expired. Such notice is never mailed prior to the expiration of the sixth year following registration nor until a reasonable time has elapsed following a six month period from the last action mailed by this Office. This notice constitutes the final action of the Patent and Trademark Office in those cases where the Commissioner's review has not been sought. Once this notice has been mailed, it is too late (under the Rules of Practice) to request the Commissioner to review the action of the examiner. Review would only be proper if an affiant could show circumstances sufficient to suspend the finality element of Rule 2.165(b) pursuant to Rule 2.148.

Registrants will be held to strict compliance with Rule 2.165 as it has been briefed above. Therefore, parties are urged to respond fully as soon as possible after an action is received from the examiner.

BERNARD A. MEANY,
Dec. 12, 1977. *Assistant Commissioner for Trademarks.*

[966 TMOG 80 (Jan. 10, 1978)]

(109) DISSEMINATION OF TRADEMARK INFORMATION

In order to clarify the policy regarding Trademark Examiners giving out Trademark information to the general public, the following directive has been promulgated:

Trademark Examiners are reminded that they may only be responsive to questions regarding applications pending before them. All other questions regarding Trademark matters must be directed to the Director of the Trademark Examining Operation, 703–557–3268.

Feb. 15, 1978. BERNARD A. MEANY,
Assistant Commissioner for Trademarks.

[968 TMOG 9 (Mar. 14, 1978)]

(110) NOTICE TO PURCHASERS OF TRADEMARK INDICES

An incorrect stock number has been assigned to the "1976 Index of Trademarks."

The correct stock number to be used when ordering the "1976 Index of Trademarks" through the Superintendent of Documents is as follows: 003–004–00532–7. The cost of this publication is $8.00 per copy.

RICHARD J. SHAKMAN,
Mar. 14, 1978. *Assistant Commissioner for Administration.*

[969 TMOG 2 (Apr. 4, 1978)]

TRADEMARK REGISTRATION TREATY

Implementing Legislation

On September 3, 1975 the Trademark Registration Treaty (TRT), signed at Vienna, Austria, on June 12, 1973, was transmitted by the President to the Senate of the United States with a view to receiving its advice and consent to ratification. Legislation designed to implement the TRT has been prepared by the Patent and Trademark Office in the Department of Commerce.

Following a suggestion by the General Accounting Office, the Patent and Trademark Office is planning a survey of a random sample of United States trademark owners who would have a direct interest in the TRT and in the changes required in United States trademark law. In order to provide the interested public with the information on which the sampled companies will base their responses, the complete draft legislation, including Summary, Statement of Purpose and Need and Sectional Analysis is reproduced below. A copy of the survey questionnaire will be published in a future issue of the OFFICIAL GAZETTE.

The text of the TRT was reproduced in the OFFICIAL GAZETTE *of July 24, 1973. Some post conference documents, including a history of the Treaty, were reproduced in the* OFFICIAL GAZETTE *of February 11, 1974. The report of the United States delegation to the Vienna Conference was reproduced in the* OFFICIAL GAZETTE *of February 11, 1975. Additional copies of the material reproduced below as well as the previous* OFFICIAL GAZETTE *publications are available upon request to the Commissioner of Patents and Trademarks.*

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

Date: July 11, 1978.

SUMMARY

In 1973, the United States and thirteen other countries signed the Trademark Registration Treaty. This Treaty was transmitted to the Senate on September 3, 1975, with a view to advice and consent to receiving its ratification.

The Trademark Registration Treaty will establish an international trademark filing arrangement, through which persons and companies residing in one of the member States can more easily register trademarks (including service marks, and collective and certification marks) and maintain these property rights in all of the member States. Since the Treaty is not self-executing, the instrument of United States ratification will not be deposited until the necessary implementing legislation is enacted.

The proposed implementing legislation effects the necessary changes in the trademark statutes and provides to persons filing domestic applications the same benefits in the United States as those accorded under the Treaty. The implementing legislation would not come into force until the Treaty enters into force. Entry into force requires the deposit of instruments of ratification or accession by five States.

STATEMENT OF PURPOSE AND NEED

The enclosed bill would amend the Trademark Act of 1946 (60 Stat. 427, as Amended, 15 U.S.C. 1051 et seq.) to implement the Trademark Registration Treaty and make certain of its benefits available to persons filing national applications for United States trademark registration.

First, the bill would implement the Trademark Registration Treaty (TRT), an agreement adopted on June 12, 1973, by the Vienna Diplomatic Conference on Industrial Property to facilitate the protection of trademarks used or intended to be used in international commerce. This Treaty was signed by the United States and was transmitted by the President to the Senate of the United States on September 3, 1975, with a view to receiving its advice and consent to ratification.

Ratification of the Treaty and its implementation by this bill would enable United States nationals and residents to avail themselves of the advantages offered by the Treaty when it has entered into force with respect to the United States. In addition to the procedural implementing provisions, the bill would effect certain changes in the Trademark Act of 1946 (60 Stat. 427, as Amended, 15 U.S.C. 1051 et seq.) that are required to be made in order to comply with certain conditions and requirements of the Trademark Registration Treaty. These changes would not come into effect until the entry into force of the Treaty.

Second, the bill also makes modifications in the present law to provide to United States nationals and residents the same benefits when filing national applications for trademark registration in the United States Patent and Trademark Office as would be available to such applicants in the United States if filing under the Treaty.

Purpose of Trademark Registration Treaty

The Trademark Registration Treaty has as its primary purpose the establishment of a trademark filing arrangement through which persons and companies residing in one of the member States can more easily register trademarks (including service marks, and collective and certification marks) and maintain these property rights in all of the member States. Separate actions in approximately 150 jurisdictions (i.e. States, possessions, territories, etc.) are now required by United States companies in order to extend the protection of a trademark throughout the world. The complexity and high cost of establishing and protecting trademarks in international markets through the diverse national laws and procedures is a serious problem for businessmen seeking to further their commercial objectives by the sale of trademarked products across national boundaries. However, if trademark protection in potential foreign markets is not secured promptly, the unprotected mark is frequently appropriated by a "pirate" or may even be coincidentally adopted by another.

The entry into force of the Trademark Registration Treaty would help alleviate these problems by establishing an alternative international registration procedure through which the effects of national trademark registration in member countries could be secured, maintained and renewed on a central international register of marks. With a few exceptions, the effects of international registration in each participating State would remain subject to the substantive requirements of the national laws of such State.

History of Treaty Development

The Trademark Registration Treaty is the culmination of continuous efforts, since 1965, by the United States, to participate in an acceptable international arrangement to facilitate the protection of trademarks in international commerce. Consideration was first given to the possibility of United States adherence to the Madrid Agreement for the International Registration of Marks, a special arrangement under the Paris Convention for the Protection of Industrial Property. The Madrid Agreement, in force since 1891, has long operated successfully among twenty-three countries, principally European.

By 1968, it became apparent that there was substantial U.S. private sector opposition to adherence to the Madrid Agreement in its present form, largely because of certain of its features which, it was argued, would be contrary to the interests of United States firms.

From 1968 to 1970, there were efforts to revise the Madrid Agreement to correct these alleged deficiencies, but these efforts were not successful. However, whereas there was opposition to our adherence to the Madrid Agreement, interested private groups continued to urge United States participation in an acceptable trademark registration treaty.

In September, 1970, a United States sponsored resolution to develop a new trademark registration treaty was adopted unanimously by the competent administrative organs of the Paris Convention. After several drafts and examination by three Committees of Experts and several Consultants' groups, a final draft was considered at a diplomatic conference held in Vienna, Austria, from May 17 to June 12, 1973. Fifty States and thirty-one international organizations (governmental and non-governmental) were represented at the conference. On June 12, 1973, the Trademark Registration Treaty was signed by eight countries, including the United States, and remained open for signature until December 31, 1973, by which date a total of fourteen countries had become signatories. The Treaty will enter into force six months after five States have deposited their instruments of ratification or accession. To date, none of the signatory States has ratified the Treaty. Four States (Congo, Gabon, Togo, and Upper Volta) have deposited instruments of accession.

Main Features of Treaty

The Trademark Registration Treaty will establish a multilateral trademark filing arrangement for residents or nationals of its member countries, which provides easier procedures for securing, administering and maintaining national trademark registration effects in other countries by filing a single international application, securing a single international registration and maintaining a record of such rights on a central international register. International registration amounts to central recording of a "bundle of national rights" rather than a separate property right.

With some exceptions (as noted below), the substantive aspects of rights are regulated by each member State according to its national law. The main features of the Treaty are as follows:

1. A national or resident of a member State may file directly with the International Bureau of the World Intellectual Property Organization an international application designating the States in which protection of the trademark is desired. Any number of States, including the applicant's home State, may be designated.

2. The international application may claim the priority (Paris Convention "right of priority") of an earlier first application to register the same trademark.

3. The application is subject to an international fee plus a fee for each designated State (not higher than 100% of the total fees for national registration).

4. After a brief examination as to formal requirements, the trademark is registered by the International Bureau. The details of the international registration are promptly published in English and French in an international gazette and communicated to each of the designated States.

5. Unless refused by a designated State, the international registration is accorded the same legal effect as if the same trademark were registered nationally in that State. The time limit for the initial notice of refusal, including all reasons or possible reasons for refusal, is fifteen months from the date of the international publication. The reasons for refusal cannot be different from those applicable to national applications.

6. If initially refused by any designated State, the owner is notified of the refusal and is guaranteed the same procedural rights of re-examination and/or remedies available in the case of refusals of national trademark applications. Further proceedings are not subject to any Treaty time limits, and are carried out directly between the owner and the concerned national office.

7. The effects of an international registration may be cancelled in any designated State according to the national law of that State. The effect of cancellation is limited to the State in which the legal action for cancellation was brought.

8. An international registration may be renewed at ten year intervals by a single renewal application filed with the International Bureau.

9. States not originally designated may be added later by requesting the recording of later designations of the new States.

10. Assignments, changes of name, limitations of the goods and/or services, etc. may be recorded by filing a single international request, with the same legal effect as if recorded in the national registers.

11. Non-use of the trademark during an initial period of three years counted from the filing date cannot result in refusal or cancellation by any State. However, any State may require that the owner declare his intention to use the trademark in that State and may further provide in its law that no action for infringement may be commenced until the continuing use of the trademark in that State has started and that any remedy (e.g. damages or profits) may relate only to the period after use has commenced.

The benefits of the Treaty will be available only to nationals or residents of member countries. As to such persons, the Treaty may be used to secure protection in a few countries, or in many, depending upon the extent of the commercial interests.

The Treaty provides that the contracting States shall constitute a Union for the international registration of marks. The provisions for administration of the Union are similar to those established for the Patent Cooperation Treaty, which was transmitted to the Senate on September 12, 1972, and was favorably acted on by that body on October 30, 1973.

The Regulations annexed to the Treaty provide rules concerning administrative requirements and procedures and details useful in implementation of the Articles.

Interest of Other Countries

In addition to the United States, the signatories of the TRT include a number of major trading countries (e.g.

Federal Republic of Germany, United Kingdom, Italy, Sweden, Austria). Others are awaiting developments in the United States, which furnished primary impetus to the negotiations. In particular, the interest of most Western European countries is contingent upon United States ratification, primarily because of the existence of the Madrid Agreement. The Trademark Registration Treaty is more modern than the Madrid Agreement, has more advantages for trademark owners and eliminates features which have long inhibited the territorial growth of the Madrid system. However, the position of the Madrid Agreement members is dependent upon the interest of major countries outside that Union in the new arrangement. Of these, the United States is clearly the most important. However, Japan, United Kingdom, Canada, and the Scandinavian group are among other countries outside the Madrid Union which are known to be seriously considering participating in the TRT arrangement, or, failing that, in some other multilateral agreement, such as Madrid.

Main Advantages

The main advantages of the Treaty are the simplified procedures provided in order to secure national registration effects, to maintain the rights thereby acquired, and to continue these rights by renewal. Other benefits are the time limits for national refusal notifications and the limitations on national use requirements.

The Treaty will not be a panacea for all trademark problems. It will establish what is essentially a multilateral trademark filing arrangement, reserving (except for a few points) the substantive aspects of rights to regulation on a country-by-country basis under the national law of each country. However, by limiting participation to States having previously adhered to the Paris Convention for the Protection of Industrial Property, it assimilates or applies the norms and standards of trademark protection law which have been agreed to by the eighty-seven member countries of that Union over the almost 100 years of its existence. The fact that its filing, maintenance and administrative procedures are independent of national procedures means that a framework for future development of international substantive standards and further rationalization of procedures is provided. Also, since trademark piracy is best dealt with preemptively by prompt filing and diligent maintenance practices, the Treaty attacks this problem directly by facilitating the filing and maintenance procedures.

Even the short range objectives and benefits will not be immediately realized upon United States ratification. Five States must ratify before the Treaty enters into force. To date, only eighteen out of the eighty-seven potential member States have taken positive steps (i.e. fourteen signatories and four adherents). The benefits of simplified filing and maintenance will accrue in proportion to the number of member States.

Effect on U.S. System—Cost

As the Treaty matures in terms of the number of participating States, one of its effects will probably be an increase of foreign origin filings in this country (present foreign origin filings are less than 10% of total filings). It is fundamental that the benefits of simplification accrue in both directions. To the extent that any increased filings reflect existing commercial rights, this result would be consistent with a fundamental purpose of the federal trademark registration system, i.e. the central recording of marks in which rights may exist. Because registration is not mandatory in order to secure rights in a trademark in the United States (and this would not change under the Treaty), the U.S. system is designed to encourage federal registration, in order to provide centralized information to those searching for and selecting new marks for new products or services to be sold in commerce. Part of the increase, as explained later, may result from permitting the filing and registration of marks based on an intent to use as an alternative to actual use.

Since the intent to use amendments to be effected by the bill will not come into force until the date of entry into force of the Treaty, none of the financial consequences will accrue until after that date. It is assumed that entry into force will occur promptly after United States ratification, if not before that date. Assuming action by the 95th Congress, increased incremental costs and manpower requirements of the Patent and Trademark Office have been estimated as shown in the following chart.

ESTIMATED COSTS INCURRED BY RATIFICATION OF TRT AND ENACTMENT OF RELATED LEGISLATION [1]

[Dollar Amounts in Thousands]

	FY 1979		Adjustment for FY 1980		Total FY 1980		Adjustment for FY 1981		Total FY 1981	
	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar	M.Y.	Dollar
Operational printing [2]		581.9		(+68.7)		650.6		(+54.8)		705.4
Operational, other [3]	21.7	420.3	(+11.6)	(+252.6)	33.3	672.9	(+7.4)	(+176.1)	40.7	849.0
Start-up [4]	3.0	109.8	(−2.0)	(−73.4)	1.0	36.4	(−1.0)	(−31.5)		[5] 4.9
	24.7	1,112.0			34.3	1,359.9			40.7	1,559.3

[1] These estimated costs will be partially offset by fees to the same extent as under our national system.
[2] Assumes additional publication of all applications will be required (see discussion of Sections 9 and 10 of bill in the Sectional Analysis).
[3] Includes supervisory, professional and clerical personnel, and mail.
[4] Includes Legislation and International staff, Organization and Systems, and all travel.
[5] Only travel remains.

An important caveat is that many of the assumptions on which the above estimates are based are, at this point, very speculative. Also, since the Treaty provides for the assessment of country designation fees (paid centrally) at a level equal to the fees for national registration, any increased operational costs of the Patent and Trademark Office due to increased filings will be offset to the same extent as under the national system. The above cost estimate does not reflect these partially offsetting fees.

Additional cost factors, too remote for attempting to estimate at this time, involve contributions to the World Intellectual Property Organization (WIPO) which will serve as the International Bureau under the Treaty. Article 34(5) of the Treaty establishes a working capital fund, constituted by a single payment made by each contracting State. Based on the experience in the case of other treaties administered by WIPO, it is believed that consideration of any working capital fund would be deferred, at least, until several years after the Treaty enters into force. The amount of the initial payment of each contracting State to this fund is computed with due regard to the number of international applications which are filed by residents of that State. Thus, a direct relationship exists between the amount of the payment by the United States and the use of the TRT by U.S. companies.

In starting up for operations under the TRT, the International Bureau will have to establish a budget financed from fees and charges for services rendered by the International Bureau, from sales of publications and other miscellaneous income. While the Madrid Agreement, also administered by WIPO, has operated at a profit for many years, and the TRT is designed to be self-supporting under normal circumstances (Article 34(4)), the possibility of deficits cannot be ruled out altogether. Deficits would be covered out of the working capital fund, which fund would then be reimbursed by the States. Deficits are not expected to be of any significant magnitude. Contributions to the working capital fund would be the responsibility of the Department of State.

Effect on U.S. Trademark Law

Participation in the international system will require that our national trademark law be amended in a number of respects. The most fundamental change is one which would permit the securing of a national registration in the United States based on intention to use the trademark applied for, and provide for an initial period of 3 years during which nonuse of the mark could not be a basis for refusing or cancelling such registration. Consistent with the Treaty, the proposed legislation provides that infringement actions in the courts would continue to be contingent upon the commencement of use, however.

As explained by the President in forwarding the Treaty to the Senate for its advice and consent, there is a sharp difference of opinion among interested persons, firms and associations in the United States as to the desirability of making this change, and, to a lesser extent, other less significant changes, required by the Treaty, in our national law.

The essence of the change in United States law is that it would move us from the strict use approach (today held to only by the United States, and a few other countries, e.g. Republic of Philippines, Panama) to the middle position, i.e. a use or intention to use system similar in principle to that of the British. The change is believed to be more consistent with the legitimate needs of businessmen, especially where international trade is contemplated.

Intention To Use Legislation

In fact, legislation permitting the filing of a trademark application based on an intent to use was widely supported in the private sector and, in the 91st Congress, identical House and Senate bills, substantially the same as the earlier Senate bills, were introduced at the request of the Administration (S. 3110, McClellan; H.R. 14050 Kastenmeier). This legislation was not reintroduced in the 93rd and 94th Congresses, however, since it was known at an early stage in the Treaty negotiations that the use requirements of the United States would be affected.

The support of intention to use legislation in the United States had its foundation in domestic concerns. Under present law actual use of a mark is a prerequisite to the filing of an application for registration. Thus, every applicant for federal registration, in addition to other requirements, must specify in his application the date of first use of the mark and the date of first use in commerce over which Congress has control (usually interstate commerce).

As applied to the adoption of new trademarks, the requirement of establishing use of a mark prior to applying for its registration is unrealistic since the time interval between clearance and adoption of a trademark and use of commercial quantities varies from several months to several years depending upon the products involved. Typically, before a consumer product is marketed commercially, there is considerable time and effort expended in the developmental effects. After having undertaken the effort and expense of creating and planning the promotion of a new mark, however, the businessman may find that the mark is not registrable because of conflict with another mark or some other reason. These problems led to the drafting and introduction of intent to use legislation.

Canada, in 1954, after careful study, adopted a system permitting applications for registration on the basis of an owner's proposed use. The Canadian system is favorably regarded by businessmen, as are the intention to use systems of many other nations. Approximately one-half of the trademark applications filed today in Canada are based on proposed use, rather than actual use, evidencing the usefulness and acceptability of the system.

Differences Between Previous Intention To Use Legislation and the Treaty

Although similar in terms of their substantive effect, the "intent to use" amendments previously proposed in this country do not satisfy the requirements of the Treaty. There are two basic differences:

(1) The time period under the Treaty during which use may not be required cannot be less than 3 years, counted from the filing date.

Under the "intent to use" bills, the time period was flexible, depending upon the length of time consumed by the examination, i.e. 90 days, counted from the date of allowance of the application by the examiner (a shorter period if the application were opposed). Although entirely dependent upon pendency experience of the Patent and Trademark Office, the period of permitted non-use of most of the applied for marks under those bills would have been in the approximate range of one to two years, counted from the filing date.

Whereas the Treaty permits the "reserving" of a mark for an initial 3 years, more extended "reserving" may be precluded under Article 19(3) and this is done in the proposed implementing legislation. Thus, the 3 year period cannot be extended except for extraordinary reasons. The fact that an application is still pending at the date of expiration of the 3 years may *not* be accepted as a reason for extension. The use requirements after 3 years are the same as under present law.

(2) Under the Treaty, the national *registration* effect of an international registration may not, for the initial three year period, be refused or cancelled on the ground of non-use. However, any country may provide that the right to sue for infringement of the registered mark (even during the three years) is subject to the condition of use, i.e. no right to sue until after continuous use has commenced; and that any remedy may relate only to the period after use has commenced.

Under the "intent to use" bills, an application could be filed, and priority secured, based on intent to use, without actual use, but the *registration* would not issue until a declaration demonstrating actual use had been filed and accepted.

The implementing legislation takes into account the above differences, as the Treaty requires. Also, in all respects, the benefits to applicants from the 3 year use moratorium are accorded to United States residents filing regular national applications in the United States as well as to those applicants filing under the Treaty.

A BILL

To amend the Act entitled "An Act to provide for the registration and protection of trademarks used in com-

merce, to carry out the provisions of international conventions, and for other purposes," approved July 5, 1946, as amended.

Be it enacted by the Senate and the House of Representatives of the United States of America in Congress assembled, that, in order to carry out the provisions of the Trademark Registration Treaty and extend its benefits to citizens and residents of the United States pursuant to the authority of Congress to regulate commerce within its control, section 1 of the Act entitled "An Act to provide for the registration and protection of trademarks used in commerce, to carry out the provisions of international conventions, and for other purposes," approved July 5, 1946 (60 Stat. 427), as amended, is amended to read as follows:

"(a) Any person who is the owner of a trademark which is used or intended to be used in commerce may register that trademark on the principal register hereby established, subject to the conditions and requirements of this Act.

"(b) Application by a person described in section 1(a) to register a trademark on the principal register may be made:

(1) By paying in the Patent and Trademark Office the filing fee and filing in such Office—

(A) A written application, in such form as may be prescribed by the Commissioner, signed by the applicant or by a duly appointed representative of the applicant, specifying the applicant's domicile and citizenship and the particular goods in connection with which the trademark is used or intended to be used in commerce;

(B) A drawing of the trademark;

(C) Except where the declaration under section 1(c) is filed together with the application, a declaration of the applicant's intention to use the trademark in commerce in connection with the goods specified in the application;

and by complying with such rules or regulations, not inconsistent with law, as may be prescribed by the Commissioner; or

(2) By designating the United States in an international registration, or in the recording of any later designation in an international registration, published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty: *Provided,* That—

(A) the person applying was entitled to file international applications, is entitled to own international registrations, and is the Owner of the international registration of the trademark sought to be registered under this Act; and

(B) a declaration of such person's intention to use the trademark in commerce in connection with the goods specified in the international registration is notified to the Patent and Trademark Office in conformity with the said Treaty.

"A person whose international application, or request for the recording of later designation, designating the United States, has been declined by the International Bureau may apply to register the same trademark under paragraph (1) of this subsection. If the application under paragraph (1) is filed in the Patent and Trademark Office prior to the expiration of two months, counted from the date of the notification by the International Bureau of its declining of the corresponding international application or request, and if the Commissioner determines that such declining was not justified, the application shall be treated as if it had been filed on the date which would have been the international registration date or the recording date of the later designation had the declining not taken place.

"(c)(1) The applicant of an application for registration under this Act, or the registrant of a registration issued on the basis of such application, shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, a declaration stating that the trademark is in use in commerce and that such use commenced on or prior to the date of expiration of three years counted from the filing date of the application, and specifying the date of his first use of the trademark, the date of his first use of the trademark in commerce, those of the particular goods identified in the registration, or, if the registration has not been issued, in the application for registration, in connection with which the trademark is used, and the mode or manner in which the trademark is used in connection with such goods. The declaration shall be signed by the registrant or his duly appointed representative, or, if the registration has not been issued, by the applicant or his duly appointed representative, and it shall be accompanied by such number of specimens or facsimiles of the trademark as actually used as may be prescribed by the Commissioner. Where the declaration concerns an application filed under, or registration issued pursuant to, section 1(b)(2), it may, in such form as may be prescribed by the Commissioner or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the date on which it was received by the International Bureau.

(2) The declaration under paragraph (1) of this subsection may be filed together with the application to which it pertains, or later: *Provided,* That unless such declaration has been filed prior to the expiration of four years, counted from the filing date, the Commissioner shall cancel the registration, if issued, or refuse the application for registration, if pending. If the declaration is accepted in respect of fewer than all of the goods stated in the registration or identified in the application, the application or registration shall be limited by the Commissioner to those of the particular goods specified in the declaration in connection with which the mark is in use in commerce.

(3) If an application for registration is pending after the expiration of the three-year period referred to in paragraph (1) of this subsection, or if a registration is relied upon in an opposition or cancellation proceeding under this Act which was filed, or which is pending, after the expiration of such period, the Commissioner may require that the declaration under this subsection in respect of such application or registration be filed within such earlier period as he may prescribe: *Provided,* That such earlier period shall not expire earlier than 2 months, counted from the date of a notice mailed to the applicant or registrant.

(4) If a person who applied for registration of a trademark under this Act, or any successor, assignee or related company of such applicant, shall subsequently apply for registration under this Act of the same or a substantially equivalent trademark on or prior to the date of expiration of five years from the filing date of the said earlier application in respect of all or fewer than all of the goods recited in the said earlier application, the three-year period referred to in paragraph (1) of this subsection shall, in respect of those of the goods which are the same, be counted from the filing date of the said earlier application, or if there were more than one such earlier application, from the filing date of the earliest of them: *Provided,* That this paragraph shall not be applicable if a declaration of use

conforming to the requirements of this subsection is filed together with the said subsequently filed application.

(5) Upon a satisfactory showing by the applicant or registrant that his failure to commence use of the mark in commerce on or prior to the date of expiration of the three-year period referred to in paragraph (1) of this subsection was due to extraordinary circumstances which excuse such failure and was not due to any intention to abandon the mark, the Commissioner may extend the date of expiration of the said period and of the time limit for filing the declaration under this subsection: *Provided*, That the said expiration dates may not be extended for the reason that the application for registration was pending after the date of expiration of the said three-year period.

(6) The Commissioner shall notify the applicant or registrant who files the above prescribed declaration of his acceptance or refusal thereof and, if a refusal, the reasons therefor.

"(d) In any application in respect of which the declaration under section 1(c) has been filed, the applicant may claim concurrent use. If concurrent use is claimed, the applicant shall state exceptions to his claim of exclusive use, in which he shall specify, to the extent of his knowledge, any concurrent use by others, the goods in connection with which and the areas in which each concurrent use exists, the periods of each use, and the goods and area for which the applicant desires registration.

"(e) If the applicant is not domiciled in the United States he shall designate by a written document filed in the Patent and Trademark Office the name and address of some person resident in the United States on whom may be served notices or process in proceedings affecting the trademark. Such notices or process may be served upon the person so designated by leaving with him or mailing to him a copy thereof at the address specified in the last designation so filed. Unless filed with the application, the document designating such person shall be filed on or prior to the date on which the applicant, or the registrant of any registration issued on the basis of such application, replies to any communication by the examiner, or otherwise institutes or defends any proceeding under this Act, relating to such application or registration. Until such person has been designated, or if the person so designated cannot be found at the address given in the last designation, such notices or process may be served upon the Commissioner."

SEC. 2 The first sentence of section 3 of such Act is amended by striking out "used in commerce".

SEC. 3 The first sentence of section 4 of such Act is amended by striking out "used in commerce" and by inserting, following "exercising", the words "or intending to exercise".

SEC. 4 Section 5 of such Act is amended by inserting, following "used" (first occurrence), the words ", or is intended to be used,"; and by inserting, following "use" (both occurrences), the words "or intention to use".

SEC. 5(a) The second sentence of section 7(a) of such Act is amended by inserting, following "date" (third occurrence), the words "of issue"; by striking out "date on which the application for registration was received in the Patent and Trademark Office" and inserting in lieu thereof the words "filing date"; and by changing the period at the end of the sentence to a colon and adding the following proviso:

"*Provided*, That if the declaration under section 1(c) has not been filed, this fact shall be indicated in lieu of the dates of first use of the mark."

(b) A new sentence is added to section 7(a) of such Act reading as follows:

"The Commissioner shall cause a notice concerning the issuance of the registration to be published in the Official Gazette of the Patent and Trademark Office."

(c) Section 7(b) of such Act is amended to read as follows:

"Subject to any conditions and limitations stated therein, a certificate of registration of a mark upon the principal register provided by this Act shall be prima facie evidence of the validity of the registration, of the registrant's ownership of the mark, and of the right of the registrant to prevent registration under this Act by any other person, except a lawful concurrent user, of the mark either in the identical form as reproduced in the registration, or in such near resemblance thereto as to be likely, when applied to the goods or services of such other person, to cause confusion or to cause mistake, or to deceive."

(d) Section 7(d) of such Act is amended by inserting, preceding the first sentence of such subsection, "(1)" and by adding, at the end thereof, the following new paragraphs:

"(2) The registrant of any registration under this Act may limit the goods and/or services specified in his registration by filing an application, in such form as may be prescribed by the Commissioner, for the recording of such limitation or, in the case of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), by filing at the International Bureau a request for the recording of a limitation, in respect of the United States, of the goods and/or services of the international registration on the basis of which such registration was issued. The Commissioner shall refuse to record any limitation requested by the registrant if its effect would be to enlarge the scope of the goods and/or services beyond that of the goods and/or services specified in the registration. The recording by the International Bureau of a limitation of the goods and/or services, in respect of the United States, of an international registration shall, unless refused by the Commissioner, have the same effect as if such limitation had been entered in the records of the Patent and Trademark Office on the same date of such recording."

"(3) Where the Commissioner has limited the goods and/or services of any registration pursuant to the provisions of paragraph (2) of this subsection, or sections 1(c)(2), 8(a)(2), or 9(c)(2) of this Act, appropriate entry of such limitation shall be made in the records of the Patent and Trademark Office and, if requested by the registrant, upon the certificate of registration or, if such copy is lost or destroyed, upon a certified copy thereof."

(e) Section 7 of such Act is amended by adding, after subsection 7(g), the following new subsection:

"(h)(1) Appropriate entry shall be made in the records of the Patent and Trademark Office of any recording notified to it by the International Bureau in respect of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), unless the effect of such recording has been refused in conformity with the provisions of this Act or of the Trademark Registration Treaty.

(2) The Commissioner shall notify the International Bureau as provided in the Trademark Registration Treaty before making any entry, other than as specified in paragraph (1) of this subsection, in the records of the Patent and Trademark Office in respect of a registration issued on the basis of an application

under section 1(b)(2), or renewed pursuant to section 9(b)(2), and the entry in such records shall not be made until the corresponding entry has been annotated and published by the International Bureau as provided in the said Treaty."

SEC. 6 Section 8(a) of such Act is amended to read as follows:

"(1) The initial term of a registration under this Act shall be 10 years counted from the filing date:

Provided, That the registration of any mark under the provisions of this Act shall be cancelled by the Commissioner at the end of 6 years counted from its date of issue, unless, within 1 year next preceding the expiration of such 6 year period, the registrant shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, an affidavit or declaration showing that the mark is still in use in commerce. Special notice of the requirement for such affidavit or declaration shall be attached to each certificate of registration. Where the affidavit or declaration concerns a registration issued pursuant to section 1(b)(2), it may, in the form prescribed herein, or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the same date as the date on which it was received by the International Bureau.

(2) If the affidavit or declaration of use under paragraph (1) of this subsection is accepted in respect of fewer than all of the goods and/or services stated in the registration, the registration shall be limited by the Commissioner to those of the particular goods and/or services specified in the affidavit or declaration in connection with which the mark is still in use in commerce.

(3) Upon a satisfactory showing by the registrant that his nonuse of the mark in commerce is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark, the Commissioner may extend the time for filing the affidavit or declaration under this section."

SEC. 7 Section 9 of such Act is amended to read as follows:

"(a) The owner of a mark which is still in use in commerce may renew his registration of that mark for periods of ten years from the end of each expiring period of the registration, subject to the conditions and requirements of this Act.

"(b) Renewal of a registration by a person described in section 9(a) may be effected:

(1) By paying in the Patent and Trademark Office the prescribed fee and filing in such Office—

(A) within the six months next preceding the date of expiration of the period for which the registration was issued or renewed, an application for renewal; or

(B) prior to the expiration of six months counted from the date of expiration of the period for which the registration was issued or renewed, an application for late renewal, on payment of the additional fee herein prescribed;

and by complying with such rules or regulations, not inconsistent with law, as may be prescribed by the Commissioner; or

(2) By the renewal of an international registration in respect of which the United States is a designated State, published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty, *Provided:* That the person applying is entitled to own international registrations and is the Owner of the international registration of the mark sought to be renewed under this Act.

If the Commissioner refuses an application for renewal of a registration filed under paragraph (1), he shall notify the registrant of his refusal and the reasons therefor. The provisions of section 1(e) shall be applicable to any person not domiciled in the United States who applies for or effects the renewal of a registration under this Act.

"(c)(1) The registrant of a registration renewed under this Act shall file in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, a declaration stating that the mark is still in use in commerce, and specifying those of the particular goods and/or services identified in the registration on or in connection with which the mark is so used. The declaration shall be signed by the registrant or by his duly appointed representative, and shall be accompanied by a specimen or facsimile showing current use of the mark. Where the renewal is effected pursuant to section 9(b)(2), the declaration may, in the form prescribed herein, or in the form prescribed by the Trademark Registration Treaty, be filed with the International Bureau, with the same effect as if it had been filed in the Patent and Trademark Office on the date on which it was received by the International Bureau.

(2) The declaration under paragraph (1) of this subsection may be filed together with the application for renewal under section 9(b)(1), or, in the case of a renewal effected pursuant to section 9(b)(2), with the demand for renewal of the corresponding international registration filed with the International Bureau, or later: *Provided,* That unless such declaration has been filed prior to the expiration of six months, counted from the starting date of the term of renewal, the Commissioner shall cancel the registration. If the declaration is accepted in respect of fewer than all of the goods and/or services stated in the registration, the registration shall be limited by the Commissioner to those of the particular goods specified in the declaration in connection with which the mark is still in use in commerce.

(3) Upon a satisfactory showing by the registrant that his nonuse of the mark in commerce is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark, the Commissioner may extend the time for filing the declaration under this section.

(4) The Commissioner shall notify the registrant who files the above prescribed declaration of his acceptance or refusal thereof and, if a refusal, the reasons therefor."

SEC. 8(a) Section 10 of such Act is amended by inserting, preceding the first sentence of such section, "(a)(1)", by striking out "(d)" in the last sentence and inserting in lieu thereof "(e)", and by adding at the end of such section the following new paragraphs:

"(2) A change in the ownership of a registration or application for registration under this Act may be recorded in the Patent and Trademark Office in such form as may be prescribed by the Commissioner, or, in the case of an application filed or registration issued pursuant to section 1(b)(2), or renewed pursuant to section 9(b)(2), by recording the change in Ownership, in respect of the United States, of the international registration on the basis of which such application was filed or such registration was issued. The recording by the International Bureau of a change in the Ownership, in respect of the United States, of an international registration shall, if valid,

have the same effect as if such change had been entered in the records of the Patent and Trademark Office on the same date as the date of such international recording.

"(3) The recording of a change in ownership pursuant to paragraph (2) which is the result of an assignment of the registered or applied for mark shall, as of the date of such recording, be accorded the same effects as those which are accorded to the recording of such assignment: *Provided,* That within three months from the date of notice of such recording, mailed to the person who applied therefor, or, where the recording is effected by the International Bureau, from the date of publication of such international recording, instruments of assignment conforming to the requirements of paragraph (1) have been recorded in the Patent and Trademark Office.

"(4) Any person, not entitled to file international applications, who has, nevertheless, become the owner of an application filed or registration issued pursuant to section 1(b)(2), or renewed pursuant to section 9(b)(2), other than as a result of a contract between him and the previous applicant or registrant, may file an application for registration of the same mark under section 1(b)(1). If the application under section 1(b)(1) is filed by such person in the Patent and Trademark Office within two years from the said change in ownership and prior to six months after the expiration of the initial term, or of the then running term of renewal, of the international registration on which such application or registration is based, it shall, in respect of those of the goods and/or services which are the same, be treated as if it had been filed on the same date as the date on which the designation of the United States in such corresponding international registration took effect: *Provided,* That such application under section 1(b)(1) conforms to all of the requirements of this Act."

(b) Section 10 of such Act is amended by adding the following subsections:

"(b) Instruments evidencing changes in the name of the applicant or registrant may be recorded in the Patent and Trademark Office, in such form as may be prescribed by the Commissioner, or, in the case of a registration issued on the basis of an application filed under section 1(b)(2), or renewed pursuant to section 9(b)(2), by recording the change in the name of the Owner of the international registration on the basis of which such registration was issued. The recording by the International Bureau of a change in the name of the Owner of an international registration, in which the United States is a designated State, shall, if valid, have the same effect as if it had been entered in the records of the Patent and Trademark Office on the same date as the date of such recording.

"(c) Where at any time, as a result of a final decision in any proceeding under this Act, it is determined that a recording made under this section is void or that such recording was made contrary to the requirements of the Act, the Commissioner shall, upon request of any interested party, cause an appropriate correction to be entered in the records of the Patent and Trademark Office. If such recording was effected on the basis of a recording in respect of an international registration, the Commissioner shall, if appropriate, deny the effect of such international recording and notify the International Bureau accordingly, as prescribed in the Trademark Registration Treaty."

SEC. 9 Section 12(a) of such Act is amended to read as follows:

"Upon the filing of an application for registration, the Commissioner shall refer the application to the examiner in charge of the registration of marks, who shall cause an examination to be made. Unless the application has been previously withdrawn or abandoned, the mark shall be published in the OFFICIAL GAZETTE of the Patent and Trademark Office at such time as the Commissioner shall prescribe, not later than 12 months, counted from the filing date of the application. In the case of an applicant claiming concurrent use, or in the case of an application to be placed in an interference as provided for in section 16 of this Act, the mark may be published subject to the determination of the rights of the parties to such proceedings."

SEC. 10 Section 12(b) of such Act is amended by striking out "6" in two places and inserting, in lieu thereof "3" and by adding at the end thereof:

"Except for the failure of an applicant to comply with the requirements of section 1(c), no mark shall be refused registration for a reason which has not been indicated in a communication given or mailed to the applicant on or prior to 12 months, counted from the filing date: *Provided,* That this limitation shall not apply to any refusal determined by the Trademark Trial and Appeal Board or by a court."

SEC. 11 The second sentence of section 13 of such Act is amended by changing the period at the end of this sentence to a colon and adding a proviso and a new third sentence reading as follows:

"Provided, That such time shall in no event be extended to a date which is later than 14 months, counted from the filing date of the application for registration in respect of which the extension of time for filing opposition is requested. An opposition may be filed by a duly authorized attorney of the opposer."

SEC. 12 Section 14 of such Act is amended by inserting, following "person" the words, "or by a duly authorized attorney of any person"; by inserting, following "date" in clause (a), the words "of issue", and by inserting, following "thereunder", in clause (c), the following words:

"or, in the case of a registration issued on the basis of an application under section 1(b)(2), or renewed pursuant to section 9(b)(2), on the ground that the registrant was not entitled to own international registrations,".

SEC. 13 The first sentence of section 15 of such Act is amended by inserting, following the third occurrence of "date", the words "of issue".

SEC. 14 The first sentence of section 16 of such Act is amended by inserting, following "may" the words ", prior to the publication under section 12(a) of such mark,".

SEC. 15 Section 17 of such Act is amended by inserting, between the first and second sentences thereof:

"Where an interference, opposition to registration or concurrent user proceeding concerns an application for registration under this Act of a mark, the entitlement to registration of which has not been finally determined by the examiner in charge of the registration of marks or, as a result of an appeal from a final refusal of the examiner, by the Trademark Trial and Appeal Board or a court, the Commissioner may, with notice to all parties, defer the commencement of such proceeding until such final determination has been made."

SEC. 16 The first sentence of paragraph (1) of section 21(a) of such Act is amended by inserting, following "affidavit", the words "or declaration"; and by striking out "section 8" and inserting in lieu thereof "section 8, 1(c), or 9(c)".

SEC. 17 Section 22 of such Act is amended by inserting, at the beginning of the sentence, "Issuance of a" and by changing the "R" in "Registration" to "r".

SEC. 18 Section 23 of such Act is amended by inserting, following "commerce" in the second sentence of such section, ", or are intended to be used in commerce,"; by striking out in the second sentence of such section "for the year preceding the filing of the application"; by inserting between the second and third sentences of such section: "An application for the registration of a mark shall be treated as an application under this section only if the application or, in the case of an application pursuant to section 1(b)(2), if the international registration or recording of later designation which is the basis for such application, contains an indication to this effect."; and by striking out in its entirety the last sentence of such section.

SEC. 19(a) The second sentence of section 24 of such Act is amended by inserting, preceding "may," the words ", or his duly authorized attorney," and by striking out the word "verified".

(b) The fourth sentence of section 24 of such Act is amended by inserting, following "used", the words ", following the date of expiration of the period referred to in section 1(c)(1),".

SEC. 20 The second sentence of section 30 of such Act is amended to read as follows:

"When the goods and/or services specified in an application fall within a plurality of classes, a fee equalling the sum of the fees for filing an application in each class shall be paid, and the Commissioner may issue a single certificate of registration for such mark."

SEC. 21(a) Subsection (a) of section 31 of such Act is amended by striking out paragraph (3) of such subsection, by appropriately renumbering the remaining paragraphs; and by inserting, following "mark" in newly renumbered clause (6) (old paragraph (7)), ", change in the name of the registrant,".

(b) Section 31 of such Act is amended by adding, after subsection 31(c), the following new subsection:

"(d) The fees specified in paragraphs (1) and (2) of subsection (a) shall, in the case of applications pursuant to section 1(b)(2) and renewals pursuant to section 9(b)(2), be deemed to be substituted for, respectively, by the individual State fees and the individual State renewal fees applicable to designations of and renewals concerning the United States pursuant to the Trademark Registration Treaty. The Commissioner shall communicate to the International Bureau the amounts of such individual State fee and individual State renewal fee and such amounts shall be the same, respectively, as the amounts of the fees specified in paragraphs (1) and (2) of subsection (a)."

SEC. 22 Section 32(1) of such Act is amended by adding at the end of such section the following sentence:

"No action under this section may be started by the registrant of a registration issued under this Act until the declaration under section 1(c) in respect of the mark which is the subject of such registration has been filed in the Patent and Trademark Office and accepted by the Commissioner."

SEC. 23(a) Section 33(a) of such Act is amended by inserting following "registration" (second occurrence), the words ", and in respect of which the mark is stated to be in use in commerce in the registration, or in the declaration under section 1(c) which has been filed in the Patent and Trademark Office and accepted by the Commissioner,"

(b) Paragraph (5) of section 33(b) of such Act is amended by inserting, preceding "registration" the words "the date of issue of the".

(c) Section 33 of such Act is amended by adding, after subsection 33(b), a new subsection reading as follows:

"(c) For the purpose of determining priority of rights in any proceeding under this Act, an application for registration of a mark which has not been withdrawn or abandoned or a registration issued on the basis of such application, shall, from and after its filing date, be accorded the same effect as if the applicant, or the registrant, had commenced use of the mark in commerce on the said filing date, without derogation, however, of any earlier priority based on use of the mark commenced earlier than the said filing date or of any right of priority to which the applicant or registrant may be entitled pursuant to section 44(d) of this Act."

SEC. 24 Section 35 of such Act is amended by adding at the end of such section the following sentence:

"Any remedy under this section shall relate only to the period after the registrant commenced the continuing use of the mark in commerce."

SEC. 25 Section 44(a) of such Act is amended by inserting, preceding the first sentence of such subsection, "(1)" and by adding, at the end thereof, the following new paragraphs:

"(2) The Commissioner shall keep a register of international registrations designating the United States which have been published and notified to the Patent and Trademark Office in conformity with the Trademark Registration Treaty, including renewals thereof and recordings related thereto, and shall be authorized to accord and refuse effects, communicate notifications, make attestations, decide petitions, determine the amounts of and receive payments of fees, and perform all other acts prescribed by the said Treaty, subject to the requirements thereof.

"(3) Where the time limit for a notification to the International Bureau prescribed by the Trademark Registration Treaty is stated in terms of the date of receipt of such notification by the International Bureau, such notification shall be transmitted by Registered Mail no later than 14 days prior to the expiration of the time limit and, except where an agency of the said Bureau, established pursuant to the said Treaty, is operating within the United States, shall be transmitted to that bureau via Air Mail.

"(4) A mark subject of an application under section 1(b)(2) in respect of which no notification of refusal or possible refusal was received by the International Bureau within the time limit fixed in Article 12(2)(a)(i) of the Trademark Registration Treaty shall be automatically entitled to registration under this Act on the same register as the one for which such application was made. Upon request by the applicant of such an application and unless the registration has been previously issued, the Commissioner shall issue the registration to which such applicant is entitled under this paragraph and the date of issue of such registration shall be the date of the OFFICIAL GAZETTE next preceding the date of expiration of the said time limit. Registration of a mark under the provisions of this paragraph shall be without prejudice to the right of any person to petition to cancel such registration under section 14 of this Act for any reason, including one which was referred to in a refusal made pursuant to section 12(b) or in an opposition filed pursuant to section 13, the notification of which was not received by the International Bureau or which was not received by such Bureau within the said time limit. If a registration is

issued pursuant to this paragraph in respect of a mark, the registration of which had been opposed in a timely filed opposition, the Commissioner shall notify the opposer in such opposition and shall, upon request of such opposer received within 30 days from the date of such notice, direct the Trademark Trial and Appeal Board to determine and decide the rights of registration as if the opposition to registration had been filed as an application to cancel the said registration on the date of issue of such registration.

"(5) Failure by the applicant of an international application or by the Owner of an international registration to act within prescribed time limits in connection with requirements pertaining to an international application, international registration or later designation designating the United States, or to any recording related thereto, may be excused upon a showing satisfactory to the Commissioner of unavoidable delay, to the extent not precluded by the Trademark Registration Treaty or by this Act."

SEC. 26 Section 44(c) of such Act is amended by striking out the first sentence of such section; and by striking out the heading, preceding the second sentence, "Country of origin defined."

SEC. 27 Section 44(d) of such Act is amended to read as follows:

"An application for registration of a mark under sections 1, 2, 3, 4 or 23 of this Act filed by a person described in paragraph (b) of this section who has previously duly filed an application for registration of the same mark in one of the countries described in paragraph (b), or a regular international application in respect of the same mark designating at least one country other than the United States, shall be accorded the same force and effect as would be accorded to the same application if filed under this Act on the same date on which such application was first filed in such foreign country, or on which such international application was first filed with the International Bureau: *Provided,* That—

(1) The application under this Act is filed within 6 months from the date on which the application was first filed in the foreign country or on which the international application was first filed with the International Bureau;

(2) The rights acquired by third parties before the date of the filing of the first application in the foreign country or of the first international application shall in no way be affected by a registration obtained on an application filed under this subsection (d);

(3) Nothing in this subsection (d) shall entitle the owner of a registration granted under this section to sue for acts committed prior to the date on which such registrant has commenced the continuing use of the mark in commerce.

In like manner and subject to the same conditions and requirements, the right provided in this section may be based upon a subsequent regularly filed foreign application or subsequent regular international application, instead of the first filed foreign application or international application: *Provided,* That any foreign application or international application filed prior to such subsequent application or international application has been withdrawn, abandoned, or otherwise disposed of, without having been laid open to public inspection and without leaving any rights outstanding, and has not served, nor thereafter shall serve, as a basis for claiming a right of priority."

SEC. 28(a) The paragraphs headed "Trademark," "Service Mark," "Certification Mark," "Collective Mark" and "Intent of Act" in section 45 of such Act are amended by inserting, following each occurrence of "used", the words "or intended to be used".

(b) Clause (a) of the paragraph in section 45 of such Act headed "Abandonment of Mark" is amended to read as follows:

"(a) when its use has not commenced and there is no intent to commence use or when its use has been discontinued with intent not to resume. Lack of intent to commence or intent not to resume may be inferred from the circumstances. If use of a mark has been discontinued, its nonuse for two consecutive years shall be prima facie abandonment."

(c) Section 45 of such Act is amended by adding the following paragraphs:

"Filing date. The filing date of an application for registration under section 1(b)(1) shall be the date on which all of the elements prescribed by the Commissioner as minimum elements for according a filing date have been received in the Patent and Trademark Office. The filing date of an application for registration under section 1(b)(2) shall be the same date as the international registration date of the international registration or, if applicable, the recording date of the later designation, on the basis of which such application is filed."

"Date of issue. The date of issue of a registration under this Act is the date of the issue of the OFFICIAL GAZETTE of the Patent and Trademark Office in which the notice concerning the issuance of the registration appears."

"Trademark Registration Treaty. The term "Trademark Registration Treaty" means the Treaty so entitled, done at Vienna, Austria, on June 12, 1973, including the Regulations under the said Treaty."

"International application, international registration, request for the recording of later designation, recording of later designation, International Bureau, regular international application, individual State fee, individual State renewal fee. The terms "international application", "international registration", "request for the recording of later designation", "recording of later designation", "International Bureau", "regular international application", "individual State fee" and "individual State renewal fee" are to be taken in the sense indicated by the Trademark Registration Treaty."

"Owner, Ownership. The terms "Owner" and "Ownership" are to be taken in the sense indicated by the Trademark Registration Treaty where they appear in this Act in capitalized form."

"Owner of a trademark. The term "owner of a trademark" means a person who is using, or who has an intention to use, a trademark in commerce: *Provided,* That no other person, except a lawful concurrent user, has the right to use, and is using or has previously declared, in an application filed under this Act which has not been withdrawn or abandoned, his intention to use, such mark in commerce either in the identical form thereof or in such near resemblance thereto as to be likely, when applied to the goods of such other person, to cause confusion, or to cause mistake, or to deceive."

SEC. 29(a) This Act shall come into force on the same date as the entry into force of the Trademark Registration Treaty with respect to the United States. It shall apply to applications for registration of marks filed in the Patent and Trademark Office on or after such date, even though entitled to an earlier effective filing date, and to registrations issued on the basis of such applications; to international applications and later desig-

nations designating the United States filed with the International Bureau on or after such date, even though entitled to an earlier effective filing date, and to international registrations accorded effects in the United States on the basis of such international applications and later designations; and to proceedings under the Trademark Act of 1946, as amended, commenced on or after such date.

(b) Except as otherwise hereafter provided, applications for registration of marks on file in the Patent and Trademark Office on the date this Act comes into force, registrations issued on the basis of such applications, and proceedings under the Trademark Act of 1946, as amended, which are pending on such date, shall be governed by the provisions of the Trademark Act of 1946, as amended, in effect immediately prior to such date.

(c) Except as otherwise provided hereafter in this section, all registrations under the Trademark Act of 1946, as amended, or under the previous Acts specified in section 46(b) of such Act, existing on the date this Act comes into force shall be governed by the Trademark Act of 1946, as amended, in effect immediately prior to such date.

(d) The provisions of section 9 of the Trademark Act of 1946, as amended, as amended by this Act, shall apply to all registrations under such Act and under the previous Acts specified in section 46(b), whether issued or applied for before, on, or after the date this Act comes into force: *Provided*, that the amendments to such section by this Act shall not apply to the renewal of any registration for any period which started on a date which is earlier than six months after such date.

(e) The amendment by this Act, of the Trademark Act of 1946, as amended, shall not affect any rights or liabilities existing under such Act in effect immediately prior to the date this Act comes into force.

SECTIONAL ANALYSIS

SECTION 1 of the bill amends section 1 of the Trademark Act of 1946, as amended (hereinafter referred to as Trademark Act) [1] in a number of respects. The preamble makes it clear that the commerce clause as well as the treaty power is invoked to support the amendments. Section 1 of the amended Trademark Act is divided into five subsections, each of which is separately discussed below:

Section 1(a) *Entitlement to registration of a trademark.* Entitlement to registration is changed from present law in one fundamental respect. This is that intention to use, as well as actual use of, a trademark is a valid basis for ownership and registration. The other conditions are essentially the same as under present law.

The applicant must be a "person", as defined in section 45. The definition of "person" has not been changed.

As under the present statute, the applicant must be the "owner" of the trademark sought to be registered. The concept of ownership is modified as necessary to be consistent with the new alternative basis of rights. Also, rather than being part of the verified statement, the definition of "owner of a trademark" is in section 45.

The term "owner" is defined, as under present law, in respect of the absence of a superior right in any other person. What is new is that a claim of ownership is defeated not only by the superior right of a prior *user* of the same or a similar mark but also by the superior right of one who has a prior *intention to use* such a mark. However, the latter right can defeat the claim of ownership *only* if the intention to use has been previously declared in an application filed under the Act which has not been withdrawn or abandoned. Accordingly, while a person acquires (absent a superior right) an ownership right by reason of his intention to use a trademark, the right in that case is inchoate and is accorded no protection under the statute and no priority until it has been fixed in an application filed under the Act in which the intention to use is declared. Thus, filing the application is critical to a claim of ownership by intention to use and except, of course, where the Paris Convention "right of priority" (i.e. section 44(d)) is invoked, the filing date is the earliest date on which such a person can rely in a priority contest. (See SECTION 23(c))

Finally, the use or intended use must be in commerce. The definition of "commerce" is not changed. The outside parameters of "intended use in commerce" are left to interpretation just as has been the case with "use in commerce" under the present statute, and the principles that would be applied in such interpretation are essentially the same.

Section 1(b) *Procedure for applying to register a trademark.* Under the amended Act, there are two basic procedures for securing the registration of a trademark, i.e. by filing an application in the Patent and Trademark Office (section 1(b)(1)) and by designating the United States in an international registration pursuant to the Trademark Registration Treaty [2] (section 1(b)(2)). Except for the place where the application is filed and the fee is paid, the substantive requirements applicable to the alternative procedures are essentially the same.

Section 1(b)(1) *Domestic procedure.* In order to achieve harmonization of domestic and international procedures, the following changes are made in the national application procedures.

1. The application may be signed by a representative, duly appointed by the applicant, as an alternative to signing by the applicant himself. The same benefit is provided to applicants filing under the Trademark Registration Treaty (Article 26).

2. Consistent with the requirements of the Trademark Registration Treaty and modern practice in regard to the filing of statements with federal agencies the verification of ownership requirement has been eliminated.

Of course, the criminal provisions of 18 U.S.C. 1001 would remain applicable to a statement made in a trademark application irrespective of whether such statement is verified.

3. The applicant need not allege use of the mark in his application. The Trademark Registration Treaty prohibits such a requirement (Article 19(3)(a)) for the owners of international registrations; consequently, the same benefit is accorded to persons filing regular national applications. Substituted for this requirement is the declaration of intention to use the mark in commerce, which *is* permitted by the Treaty (Article 19(4)). Consistent with this change, specimens or facsimiles of the mark as actually used need not be submitted with the application.

It should be noted that required allegations and exhibits relating to actual use according to the present statute are

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[1] Public Law 489, 79th Congress, approved July 5, 1946; 60 Stat. 427. Amendments have been effected by the following public laws.
P.L. 710, 81st Cong., 64 Stat. 459, 8–17–50.
P.L. 593, 82nd Cong., 66 Stat. 792, 7–19–52.
P.L. 609, 85th Cong., 72 Stat. 540, 8–8–58.
P.L. 333, 87th Cong., 75 Stat. 748, 10–3–61.
P.L. 772, 87th Cong., 76 Stat. 769, 10–9–62.
P.L. 89–83, 89th Cong., 79 Stat. 260, 7–24–65.
P.L. 93–596, 93rd Cong., 88 Stat. 1949, 1–2–75.
P.L. 93–600, 93rd Cong., 88 Stat. 1955, 1–2–75.

[2] Done at Vienna, Austria, June 12, 1973. This is the Treaty which was transmitted by the President to the Senate for advice and consent to ratification on September 3, 1975. *Congressional Record* 9/3/75, S. 15139.

retained in section 1(c). It should also be noted here that the applicant *may* file the section 1(c) declaration together with his application (section 1(c)(2)), if the mark is already in use in commerce. In such case, the declaration of intention to use is obviously superfluous and need not be made.

Section 1(b)(2) *International procedure.*

This paragraph states the requirements which must be satisfied in order to secure the effect of a United States application, i.e. the effect required by the Trademark Registration Treaty (Article 11(1)).

The provisions of Article 19(4) of the Treaty, requiring a declaration of intention to use, are also implemented, corresponding to the same requirement in section 1(b)(1)(C) for domestic applicants.

Finally, a special requirement as to entitlement of a foreign applicant to use the Trademark Registration Treaty (Article 4) has been added since the International Bureau will only examine this question formally, leaving it to the designated States to examine it as to substance. Thus, non-entitlement of a foreign applicant to use the Treaty procedure is a ground for refusal (Article 12(1)(ii)) or cancellation (Article 13(1)(ii)) in addititon to the grounds applicable under the national law.

The final two sections of section 1(b) implement part of Article 9 of the Treaty whereunder the improper declining of an international application or later designation request by the International Bureau can be rectified by filing a regular domestic application within 2 months from the notice of the declining.

Section 1(c) *Declaration of use.*

Section 1(c) calls for a declaration of use showing that use of the mark commenced on or prior to the date of expiration of three years, counted from the filing date. Paragraph (1) requires the declaration to contain essentially the same information as that required by present section 1.

Paragraph (2) prescribes a time limit of four years, counted from the filing date, within which the declaration may be filed, and indicates the consequences of failure to file an acceptable declaration.

Paragraph (3) authorizes the Commissioner to require the earlier filing of a declaration when important relative to an issue in any Office proceeding, provided that the three-year period has expired.

Paragraph (4) prevents abuse of the intention to use provisions by a person filing successive applications for the same, or a substantially equivalent, mark by providing that, unless there is a gap of at least two years between the expiration of the nonuse moratorium of the earlier case and the date of filing of the later case, the three-year period in the later case is measured from the filing date of the earlier case. Any subsequent application which is accompanied by a declaration of use is excluded from the special provisions.

Paragraph (5) provides for an extension of the time limits when due to extraordinary circumstances nonuse is excusable. The proviso expressly states, however, that the mere pendency of the application for registration as of the expiration of the three-year period shall not justify an extension, making it clear that Article 19(3)(b) of the Trademark Registration Treaty does not apply in the United States.

Paragraph (6) requires the Commissioner to give notice regarding acceptance or refusal of a declaration.

Section 1(d) *Special requirement for concurrent use applications.*

This provision, unchanged from present law, is placed in a separate subsection because its applicability is limited to applications wherein the section 1(c) declaration of use has been filed.

Section 1(e) *Special requirement for applicants not domiciled in United States.*

This subsection requires all applicants not domiciled in the United States to designate an agent for service on or prior to the institution or defense of a proceeding under this Act. Before a local agent for service has been designated, service may be made upon the Commissioner.

SECTIONS 2 and 3 of the bill amend sections 3 and 4 of the Trademark Act so that service marks and collective and certification marks may be registered based on either use or intention to use.

SECTION 4 of the bill amends section 5 of the Trademark Act to provide that the intended use by a related company inures to the benefit of the registrant or applicant.

SECTION 5(a) of the bill amends section 7(a) of the Trademark Act to take into account the fact that registrations issued on the basis of intent applications would not, if the declaration of use has not been filed, contain any data concerning use of the mark. In such cases, the fact that the declaration has not been filed would be indicated in the registration in lieu of the indications as to use. Also, the term "date of the registration" has been deleted, the significant dates under the amended statute being the "filing date" and the "date of issue."

SECTION 5(b) amends section 7(a) by requiring a notice of registration to be published in the OFFICIAL GAZETTE in support of the definition of "date of issue" in section 45.

SECTION 5(c) amends section 7(b) of the Trademark Act by deleting the presumption of the registrant's exclusive right to use the registered mark in commerce on the goods specified in the registration. One reason is that this presumption in the present statute is repeated in section 33(a).

The other reason is that this presumption, as it pertains to infringement actions, must be limited to be consistent with the limitation on the right even to file an infringement action prior to the commencement of use (see SECTION 23(a)).

Deletion of the "exclusive right to use" presumption from section 7(b) leaves a gap in the statute, however, the bringing of Patent and Trademark Office proceedings, i.e. oppositions and cancellations is not subject to the above mentioned limitation. The exclusive right to use presumption has served in such proceedings as the basis of the ruling that a registrant is entitled to rely solely upon his registration on the principal register as prima facie evidence of his right to exclude any other person from securing a registration under the Act of a confusing mark. Therefore, a presumption as to this right has been added.

SECTION 5(d) of the bill amends section 7(d) by adding two new paragraphs which provided domestic and international procedures, consistent with present law and with the Treaty, for amending a registration in respect of the specification of goods and/or services.

SECTION 5(e) of the bill amends section 7 by adding a new subsection, section 7(h), providing for appropriate notification, consistent with Article 20 of the Treaty, with respect to entries concerning registration based on international registrations.

SECTION 6 of the bill amends section 8(a) of the Trademark Act by changing the term of a registration from 20 to 10 years and the date from which the terms is measured from the registration date to the filing date. These changes correspond the term of domestic registrations to that of registrations secured under the Trademark Reg-

istration Treaty. The shorter term also facilitates the clearing from the register of unused marks.

The section is also amended to require that the use declared in the affidavit or declaration set forth in the proviso, i.e. the present section 8 affidavit, be use "in commerce".

Finally, the section is amended to permit, consistent with the requirement in the Treaty (Article 19(3)(d)), that such affidavit or declaration requirements be capable of being fulfilled in the case of an international registration by filing with the International Bureau.

SECTION 7 of the bill amends section 9 of the Trademark Act to set forth domestic and international procedures for renewal and to provide equivalent treatment, as to substantive requirements, of international and domestic registrants. Thus, as in the case of an application for registration, the renewal application may be signed by a representative, duly appointed by the registrant.

Two changes are made in the statute which conform to the Treaty, as follows:

1. The term of renewal is 10 years rather than 20, consistent with the Treaty (Article 17).
2. The time period, counted from the expiration date of the expiring term, in which a late renewal application can be filed is increased from three months to six months, corresponding to Article 17(3)(a).

Section 9(c) requires a declaration of use which requirement is applicable to all renewed registrations. Other than the three additional months in which to declare use of the mark, the only difference from present law is that the consequence of failure to satisfy the requirement is cancellation of the registration rather than refusal to renew.

SECTION 8(a) of the bill amends section 10 of the Trademark Act in several minor respects. Except for a technical change, the present provision for recording of assignments (section 10) is not changed.

Three new paragraphs have been added to the assignment section. The first two of these (i.e. 10(a)(2) and 10(a)(3)) implement Article 14 of the Treaty, under which a change in the ownership of an international registration may be recorded, by adding equivalent procedures to the national law. Thus, any applicant or registrant may record the fact that a new person has become the owner of an application filed or registration issued under the Act by complying with certain basic formalities. Paragraph (3) provides that if this step is taken within the period specified in paragraph (1) and it is followed up by the recording of instruments of assignment conforming to the requirements of paragraph (1), the constructive notice effect of recording an assignment in the Office will accrue.

The third additional paragraph (i.e. 10(a)(4)) is a special provision, implementing Article 14(5), for the benefit of one who, although not entitled to file under the Treaty, becomes the owner of an international registration by operation of law (e.g. by inheritance). Such a person may, subject to special requirements, rectify this defect by filing a regular national application.

SECTION 8(b) of the bill amends section 10 of the Trademark Act by adding two new provisions. The first of these (Section 10(b)) adds a new procedure, consistent with Article 15 of the Treaty, for recording a change in the name of the registrant.

Subsection (c) is added to clarify the procedure where a recording is void. Recordings under subsections (a) and (b) may later be determined to be void or contrary to law in another proceeding (cancellation, infringement action, etc.) under the Act. A specific provision has been added to clarify the fact that the Commissioner has the authority to correct the records and to provide a basis for denial of any international recording which formed the basis of the national entry.

SECTION 9 of the bill amends section 12(a) of the Trademark Act to provide for a "cut off" in the length of the ex parte examination of twelve months counted from the filing date of the application. Under amended section 12(a) all applications, the examination of which has not been completed, would have to be published for opposition purposes no later than 12 months from the filing date.

The reason for 12 months as the "cut off" is that the time required to effect publication, to receive oppositions (including delays in processing oppositions received on the last day), and to communicate, in the case of international registrations, all grounds of refusal or possible refusal to the International Bureau, must be taken into account in order to meet the deadlines prescribed by the Treaty (see Article 12).

It should be noted that the exact schedule for publication is left to determination by the Commissioner. There are, at least, two possibilities: (1) publication, promptly after filing, of all applications; and (2) publication (of allowed cases) after completion of the ex parte examination (as at present), or (of all still pending cases) at the expiration of 12 months, whichever event is the earlier to occur.

SECTION 10 of the bill amends section 12(b) of the Trademark Act by reducing the period of time in which to reply to an Office communication concerning the application from six to three months and by providing a time limitation applicable to notifying the applicant of grounds raised during the ex parte examination. The reduction of response time should make it possible for the Office to complete the ex parte examination of most applications within the 12 months period of amended section 12(a).

The cut off is the same as the one in amended section 12(a), i.e. 12 months, counted from the filing date. The examination need not be completed within the 12 months as the Treaty requirement is only that all grounds be communicated within that period. Also, the limitation would not apply to a new ground of refusal based on a decision of the Trademark Trial and Appeal Board or of a court.

SECTION 11 of the bill amends section 13 of the Trademark Act by providing for a time limit of 14 months for receiving oppositions. The 14 month time limitation ties in with the amendment to section 12(a) of the Act, providing equivalence of treatment of domestic and Treaty applicants. Section 13 is also amended to provide that an attorney may file an opposition on behalf of the opposer.

SECTION 12 of the bill amends section 14 of the Trademark Act in two respects, conforming this section to amended section 13, and a minor change in terminology ("date of issue").

SECTION 13 of the bill amends section 15 of the Trademark Act by a minor change in terminology ("date of issue").

SECTION 14 of the bill amends section 16 of the Trademark Act by providing specifically that an interference may be declared as to any particular application for registration of a mark only prior to the publication for opposition of that mark. While this is no different than current practice, the change in the statute seemed desirable. Since the declaration of an interference would constitute a ground of possible refusal under the Trademark Registration Treaty, such ground would have to be notified to the International Bureau within the prescribed time limit.

By requiring the declaration of the interferences prior to the date of publication, the section is subject to the same time limitation as in amended section 12(a), i.e. 12 months from the filing date.

SECTION 15 of the bill amends section 17 of the Trademark Act by providing discretionary authority to the Commissioner to defer the commencement of certain inter partes proceedings where the ex parte examination of a concerned application is not complete.

SECTION 16 of the bill amends section 21 of the Trademark Act by providing for an appeal from a refusal to accept a declaration pursuant to sections 1(c) and 9(c), as is now provided in the case of refusal of a section 8 affidavit.

SECTION 17 of the bill makes a language change in section 22 of the Trademark Act, consistent with the change from "date of registration" to "date of issue". Thus, constructive notice begins with publications of issuance of the registration (date of issue), no different in substance than under present law.

SECTION 18 of the bill amends section 23 of the Trademark Act by eliminating the requirements and provisions relating to use in the first and fourth paragraphs. Also, provision is made for treatment of applications as being under this section only where the application or the international registration (or recording of later designation) so indicates. The specific reference implements Article 11(3) which requires this treatment in the case of international registrations.

SECTION 19(a) of the bill amends section 24 of the Trademark Act by deleting the requirement that a petition to cancel a registration on the Supplemental Register be verified (consistent with amended section 14).

SECTION 19(b) of the bill amends section 24 of the Trademark Act by limiting the authority to cancel a registration on the Supplemental Register for nonuse, consistent with the use moratorium of the Treaty.

SECTION 20 of the bill amends section 30 of the Trademark Act in minor respects to remove an incidental reference to use of a mark that is inconsistent with amended section 1.

SECTION 21(a) of the bill amends section 31 of the Trademark Act by deleting the requirement of a fee for the filing of a section 8 affidavit. Since a section 8 fee cannot be assessed against a registration issued on the basis of an international registration (Article 19(1)), it is deleted in order to provide equivalence between domestic and Treaty applicants as to fees payable to the United States.

SECTION 21(b) of the bill amends section 31 of the Trademark Act by adding new subsection (d) whereby the filing and renewal fees are deemed to be substituted for by the corresponding fees set forth in the Treaty, where the international procedure is followed. This provision also obligates the Commissioner to fix the Treaty fees at the same amounts as the national fees.

SECTION 22 of the bill amends section 32(1) of the Trademark Act by providing that no infringement action may be started under the Act until the declaration of use of the mark in commerce has been filed in the Patent and Trademark Office and accepted by the Commissioner. This change implements the last sentence of Article 19(3)(a). Examination of the declaration could be accelerated if the registrant faced an impending infringement situation.

SECTION 23(a) of the bill amends section 33(a) of the Trademark Act so that the presumption of exclusive right to use the mark would apply as a rule of evidence only as to those goods and/or services in respect of which the mark is stated to be in use in commerce either in the registration itself or in the declaration under section 1(c).

SECTION 23(b) makes some minor changes in the language of section 33(b).

SECTION 23(c) amends section 33 of the Trademark Act by adding a new subsection (c) to define priority of rights accorded to applications or registrations based on an intention to use the mark. Under new subsection (c), the priority of an intent applicant or registrant would be *the same as if* he had commenced use of the mark in commerce on the filing date, unless, of course, he had an earlier priority based on use or based on the Paris Convention priority provisions of section 44(d) of the Act.

SECTION 24 of the bill amends section 35 of the Trademark Act in order to implement the last sentence of Article 19(3)(a) so that the remedies of profits and damages cannot date back prior to the date of commencement of use.

SECTION 25 of the bill renumbers present section 44(a) of the Trademark Act as section 44(a)(1) and adds to it some special provisions relating to the Trademark Registration Treaty.

Paragraph (2) authorizes the Commissioner to keep a register of international registrations designating the United States.

Paragraph (2) also contains a broad implementing provision, authorizing the Commissioner to take various actions prescribed by the Treaty. While all of the essential Treaty provisions parallel to provisions concerning domestic applications and registrations have been specifically implemented, a large number of Treaty provisions remain which solely concern the international procedures.

Paragraph (3) prescribes a procedure for communicating notifications where the deadline is stated in terms of the date of receipt by the International Bureau, most importantly the notification of refusal or possible refusal under Article 12(2)(a)(i).

Paragraph (4) implements Article 11(2)(i) of the Treaty providing for automatic registration as of the date of expiration of the time limit fixed in Article 12(2)(a)(i) where no notification of refusal or possible refusal has been received by the International Bureau.

Paragraph (5) implements Article 29 of the Treaty whereby certain delays in meeting the time limits fixed in the Treaty must be waived and others may be waived. There are some specific exceptions in the Treaty which is the reason for the last clause in this paragraph.

SECTION 26 of the bill amends section 44(c) of the Trademark Act by deleting the first sentence of this subsection. Since a person can secure a registration based on an intention to use the mark in commerce, the sentence is inconsistent with the amended Act. However, the sentence is no longer necessary. Under the amended Act all applicants would be required to declare use or an intention to use in commerce, whether or not the mark is also registered in the country of origin.

SECTION 27 of the bill deletes present subsection 44(d) of the Trademark Act and substitutes therefor a subsection providing that a right of priority may be based on a first international application as well as a first national application. Paragraph (2) of present subsection (d) is not continued. Waiver of use in commerce is no longer necessary since an application need not allege use under the amended Act. Old paragraph (4) (new paragraph (3)) of the subsection is amended to be consistent with the first sentence of section 44(c).

SECTION 28(a) of the bill amends the definitions, in section 45 of the Trademark Act, of the terms "trademark,"

"service mark," "certification mark," "collective mark" and "Intent of Act" by adding the phrase, "or intended to be used" in appropriate places consistent with the new basis for securing registrations.

SECTION 28(b) of the bill amends the definition, in section 45 of the Trademark Act, of "abandonment" to provide for abandonment of a mark applied for based on an intention to use where no use is commenced and there was never any intention to commence use. The two year prima facie abandonment provision is amended to make it clear that it applies only where use of a mark is discontinued.

SECTION 28(c) of the bill amends section 45 of the Trademark Act by adding the following new definitions:

(1) "Filing date" is defined because of its significance in respect of priority of rights in the case of an application or registration based on the intention to use;

(2) "Date of issue" is defined;

(3) "Trademark Registration Treaty" is defined;

(4) Various terms used in respect of the Trademark Registration Treaty are referenced to the Trademark Registration Treaty definitions;

(5) The terms "Owner" and "Ownership," used in capitalized form are referenced to the Trademark Registration Treaty.

This was done in order to distinguish these references from other references in the statute to "owner" or "ownership" which refer to the owner, or ownership, of a mark.

Finally, the term "owner of a trademark" is defined. The reason for this definition is discussed under SECTION 1, infra.

SECTION 29 of the bill prescribes the implementation of the various changes effected by the bill. The effective date of the Act coincides with the entry into force of the Treaty with respect to the United States. Appropriate provisions specify the controlling law which is applicable before, or on or after, the effective date.

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(112) TRADEMARK APPLICATIONS UNDER SECTION 44 OF THE TRADEMARK ACT OF 1946

[37 CFR Parts 2 and 4]

Withdrawal of Proposed Rules

AGENCY: Patent and Trademark Office, Commerce.
ACTION: Withdrawal of proposed rules.

SUMMARY: The Patent and Trademark Office hereby withdraws its rule proposals (FR Doc. 77-23095 published in the Federal Register on August 10, 1977, 42 FR-40450; 962 TMOG 2-4, September 6, 1977) regarding applications filed under section 44 of the Trademark Act of 1946.

Under the proposed rules, foreign applicants filing under section 44 (d) or (e) of the Trademark Act of 1946, as amended, 15 U.S.C. 1126, would no longer have been required to allege use of the mark somewhere or to submit specimens or facsimiles demonstrating such use.

The primary consideration for the withdrawal of this rules proposal was the strong objection voiced by several commenters that the proposed rule changes would have placed some United States nationals in a less favorable position than foreign nationals than is the case under the present rules.

EFFECTIVE DATE: June 30, 1978.

FOR FURTHER INFORMATION CONTACT: J. Paul Williamson, Patent and Trademark Office, 703-557-2521.

SUPPLEMENTARY INFORMATION: A notice was published in the OFFICIAL GAZETTE of the United States Patent and Trademark Office on April 30, 1974 (921 OG TM 250) detailing the procedure being followed by this Office in connection with applications filed under section 44 of the Trademark Act of 1946 without specimens and without a statement of use of the mark. That notice is hereby withdrawn and the procedure thereunder terminated. Henceforth, in order to receive a formal filing date, an application under section 44 must include in the application at least one specimen and a statement that the mark has been used.

Those applicants having cases now under suspension in this Office in accordance with the April 1974 OFFICIAL GAZETTE notice will be notified individually of the Office policy regarding specimens and use as set out above.

Finally, the withdrawal of this rules proposal should in no way be interpreted as a diminution of the continuing support of the Department of Commerce and this Office for the Trademark Registration Treaty. Under that Treaty it will be possible to treat all applicants, foreign and domestic, equally in regard to initial use requirements for filing an application for trademark registration in the United States Patent and Trademark Office.

Dated: June 16, 1978.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

Approved:
JORDAN J. BARUCH,
Assistant Secretary for Science and Technology.

[FR Doc. 78-18301; Filed 6-29-78; 8:45 am]

[973 TMOG 19 (Aug. 1, 1978)]

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(113)

THE RETENTION SCHEDULE FOR TRADEMARK RECORDS

As with most government agencies, the Patent and Trademark Office disposes of old files, papers and records pursuant to a specific schedule. In an effort to clarify any questions concerning the procedures for disposing of Trademark records and in response to public inquiries, the present Retention Schedule for Trademark Records and other records including trademark matters which may be of interest to the public is set forth as follows:

International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports, records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.	*PERMANENT.* Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interests of the Patent and Trademark Office. Includes drafts of legislation, reports to committees on introduced legislation, and comments on legislative proposals.	*PERMANENT.* Transfer to FRC after 5 years. Offer to National Archives when 25 years old.
Trademark Adversary Proceedings Files. Consists of Trademark Opposition, Cancellation, Interference, and Concurrent-Use proceedings files.	The past schedule to destroy after 10 years is in the process of being changed. At this time, these records are not being disposed of pending the new amendment to this section.

THE RETENTION SCHEDULE FOR TRADEMARK RECORDS—(Continued)

Canceled Trademark Registration Files. Consists of original application and all related correspondence.	Destroy 2 years after the date of cancellation.
Expired Trademark Registration Files. Consists of original application and all related correspondence.	Destroy 2 years after expiration of registration.
Abandoned Trademark Application Files. Consists of original application and all related correspondence.	Destroy 2 years after date of abandonment.
Trademark Renewal Index. Index to trademark registrations that are renewed.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Indexes to Trademark Applications. Index shows applicant's name, serial number of application, filing date, name of mark description of goods, attorney's name, and final disposition of the application.	
A. Applicant's Index.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
B. Serial Index.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Proceedings Index to Trademark Adversary Proceedings. Index arranged by type of proceeding. Shows status of proceeding prior to and immediately after a decision by the Board.	Destroy 3 years after termination of the proceeding.
Trademark Adversary Proceeding Records. Card file showing records of Trademark Adversary Proceedings.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Trademarks Published in Official Gazette. Clippings of marks from *Official Gazette.*	
a. Those which have been opposed.	Retain in agency until no longer needed for reference.
b. All others.	Destroy when mark is registered.
Trademark Registrant's Index. Index to Trademark registrant's name, includes serial and registration numbers, date of registration, line of goods and other related information.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Class of Goods Index. Card index used to indicate into what class any conceivable goods may fall.	Destroy after information transferred to magnetic media.
Index to Trademark Trial and Appeal Board Cases. Record of trademark trial and appeal board cases.	*PERMANENT.* Offer to National Archives when no longer needed for reference.
Public Advisory Committee for Trademark Affairs Files.	
a. Agenda, minutes, correspondence, reports and related supporting files.	*PERMANENT.* Transfer to Federal Records when 10 years old. Offer to National Archives when 25 years old.
b. Working papers and reference materials.	Destroy when 10 years old or no longer needed for reference, whichever is sooner.
Seminar in Trademark Practice and Procedure Files. Record set of training materials used in training trademark examiners.	*PERMANENT.* Transfer to Federal Records Center when 10 years old. Offer to National Archives when 25 years old.
Trademark Petitions Files. Petitions to the Commissioner relating to trademarks with related materials.	
a. Original Petitions in trademark case file.	Dispose of with related case file.
b. Other copies.	Destroy when 2 years old.
Trademark Protest Letters. Letters of protest to the Commissioner related to trademarks.	Destroy when no longer needed or when three years old, whichever is earlier.
International Patent and Trademark Activities Case Files. Project case files showing Patent and Trademark Office activity relating to international patent and trademark programs.	
a. Records that supplement the International Property Activities Case Files (Item 103).	*PERMANENT.* Transfer to office responsible for international affairs after case is closed.
b. Other materials.	Destroy 5 years after close of case or sooner if no longer needed.

THE RETENTIAL SCHEDULE FOR TRADEMARK RECORDS—continued

International Intellectual Property Activities Case Files. Project case files showing Patent and Trademark Office activity relating to problems concerning the protection of intellectual property throughout the world. Includes correspondence with private individuals, the Department of State and other countries; reports; records of international meetings concerning patents; trademarks and other matters pertaining to the protection of intellectual property throughout the world; and other materials relating to international affairs.	*PERMANENT.* Transfer to FRC 5 years after close of case. Offer to National Archives when 25 years old.
Proposed Intellectual Property Legislation Files. Documents accumulated in the preparation and processing of legislation proposed by or in the interest of the Patent and Trademark Office. Includes drafts or legislation, reports to committees on introduced legislation, and comments on legislative proposals.	*PERMANENT.* Transfer to FRC after 5 years. Offer to National Archives when 25 years old.
Bulky Trademark Specimens. Trademark applications specimens which do not strictly meet the basic requirements for physical form of specimens which state: 1. That they be made of material suitable for being placed inside a manila file wrapper. 2. That they be capable of being arranged flat, such as being folded. 3. That they be of a size not to exceed 8½ inches wide by 13 inches long. (Rule 2.56) These requirements provide for specimens which will fit inside the application file wrapper, which is 9 x 14 inches in size and which will conveniently expand to about one inch thickness. Specimens which do not meet the above requirements are referred to as "bulky" specimens and the Examiner must require that they be replaced by specimens of acceptable size and shape.	Destroy 30 days after applicant is notified that the specimens are unacceptable, unless picked up sooner by the applicant.

February 28, 1979.

[980 TMOG 16 (3–27–79)]

SAUL LEFKOWITZ,
Acting Assistant Commissioner for Trademarks.

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(114) FLEXIBLE WORKING HOURS

On January 4, 1979 the Patent and Trademark Office is beginning a 15 month experiment with flexible working hours for its employees. Under the "flexitime" experiment many of the Office's employees will have flexibility to begin their workdays as early as 6:30 a.m. or as late as 9:30 a.m., and end their workdays between 3:00 p.m. and 6:30 p.m. Employees in every case shall of course work eight hours each day. All or most patent and trademark examiners will have flexible hours.

The public hours of the Patent and Trademark Office will continue to be 8:30 a.m. to 5:00 p.m. All units of the Office which deal directly with the public will be staffed to answer telephone calls and receive visitors during those hours. All employees will be on duty from 9:30 a.m. to 3:00 p.m. The patent public search room will continue to operate from 8:00 a.m. until 8:00 p.m. and the trademark search room from 8:00 a.m. until 5:30 p.m.

With the advent of flexible hours, it will be advisable for members of the public to make appointments in advance when they wish to interview examiners.

Dec. 13, 1978.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

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(115) BULKY SPECIMENS IN TRADEMARK CASES

When an application containing bulky specimens is received, it will be given a filing date; but before it is forwarded to the Examiner, a letter will be sent to the applicant requiring new specimens in conformance with Rule 2.56. If the new specimens are not received within six months from the date of the letter, the application will be abandoned. The letter will also note that the "bulky specimens" received by the Office will be held for pick-up by the applicant for 30 days from the date of the letter, and will then be destroyed.

This practice is being instituted to alleviate the increased storage difficulties posed by bulky specimens. As always, however, an Examiner has the discretion to request additional information in the form of bulky specimens during examination under Trademark Rule 2.61(b). In the case of International Class 16, at least one complete issue of a publication will still be required. Also in the situation where the mark is a configuration of the goods, or a configuration of the container of the goods, then one actual container may be required. The other four specimens should be facsimiles as described in Trademark Rule 2.57. All applicants are reminded that bulky specimens which are not picked up within 30 days of notification will be destroyed and that specimens having intrinsic value should not be filed.

The inconsistent provisions of the previous O.G. Notice concerning bulky specimens [900 T.M.O.G. 176 (July 25, 1972], are hereby repealed.

The new procedure will be put into effect on April 1, 1979.

Feb. 28, 1979.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

[980 TMOG 17 (3–27–79)]

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(116) PUBLIC ADVISORY COMMITTEE FOR TRADEMARK AFFAIRS

Reestablishment

In accordance with the provisions of the Federal Advisory Committee Act 5 U.S.C. App. (1976) and Office of Management and Budget Circular A–63 of March 1974, and after consultation with GSA, it has been determined that the reestablishment of the Public Advisory Committee for Trademark Affairs is in the public interest in connection with the performance of duties imposed on the Department by law.

The Committee was first established in September, 1970, and its present charter expired on January 10, 1979. Since its inception the purpose of the Committee has been to advise the Patent and Trademark Office concerning steps which can be taken to increase the efficiency and effectiveness of administration of the Trademark Act and to provide a continuing flow of knowledge from the private sector to the government in the field of trademarks. Approximately seventy-five per cent of the over one hundred twenty-five specific recommendations have been implemented at least in part. There is no question that the Committee has contributed greatly to the efficiency and effectiveness of the administration of the statute. In reviewing the Committee, the Secretary has sought continued effort towards this objective. The

Committee's function cannot be accomplished by any organizational element or other committee of the Department.

As it was initially established, the Committee will continue to comprise the members of the Advisory Committee for Trademark Affairs of the United States Trademark Association. The membership is balanced and is under the control of the President of the Association. The Committee will continue to operate in compliance with the provisions of the Federal Advisory Committee Act.

Copies of the Committee's revised charter will be filed with appropriate committees of Congress.

Any inquiries or comments may be addressed to Patricia M. Davis, Committee Control Officer, Office of Trademark Program Control, U.S. Patent & Trademark Office, Washington, D.C. 20231; telephone (703) 557–3881.

GUY W. CHAMBERLIN,
Dated March 15, 1979. *Assistant Secretary for Administration.*

[FR Doc. 79–8929; Filed 3–22–79; 8:45 am]

[982 TMOG 14 (5–15–79)]

(117) Forms Booklet Available

A new publication titled "Patent and Trademark Forms Booklet" dated October 1979 is now available from the Superintendent of Documents. The price is $12.00 and the stock number is 003–004–00569–6.

The booklet contains forms for use by the public in both patent and trademark cases. The booklet is printed on 8½ by 11 inch paper and is designed for use as a full size master copy for copying. It includes 52 English language forms (oaths, declarations, etc.) for use in patent cases, 69 non-English language forms for use under 37 CFR 1.69 situations in patent cases, 3 forms for use in international applications filed under the Patent Cooperation Treaty, and 70 forms for use in trademark cases.

Orders should be directed to:

Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

SIDNEY A. DIAMOND,
Dated: Mar. 26, 1980. *Commissioner of Patents and Trademarks.*

[993 TMOG 18 (4–22–80)]

(118) Reorganization of the Patent and Trademark Office

In July 1980 the Patent and Trademark Office was reorganized to establish a fourth Assistant Commissioner position. The new Assistant Commissioner is known as the Assistant Commissioner for Finance and Planning. Set forth below is the text of Department of Commerce Organization Order 30–3B and an accompanying organization chart defining the functions and lines of authority for the principal units in the Patent and Trademark Office.

SECTION 1. PURPOSE

.01 This Order prescribes the organization and assignment of functions within the Patent and Trademark Office. (Department Organization Order 30–3A prescribes the scope of authority and functions.)

.02 This revision reflects the realignment of existing elements of the Patent and Trademark Office to form the offices reporting to the newly established Assistant Commissioner for Finance and Planning (Section 9.), and incorporates the provisions of outstanding amendments.

SECTION 2. ORGANIZATION STRUCTURE

The principal organization structure and line of authority shall be as depicted in the attached organization chart (Exhibit 1).

SECTION 3. COMMISSIONER OF PATENTS AND TRADEMARKS

The Commissioner of Patents and Trademarks determines the policies and directs the programs of the Patent and Trademark Office and is responsible for the conduct of all activities of the Patent and Trademark Office. The Commissioner is principally assisted by a Deputy Commissioner, four Assistant Commissioners and a Solicitor whose main duties shall be as specified below.

a. The *Deputy Commissioner* shall assist the Commissioner in the direction of the Patent and Trademark Office; shall perform the duties of the Commissioner in the latter's absence; and shall direct the Office of Equal Employment Programs.

b. The *Assistant Commissioner for Patents* (an Assistant Commissioner under 35 U.S.C. 3) shall provide administrative and policy direction to the patent examining and documentation operations which consist of the organizational elements enumerated in Section 5. of this Order. The Assistant Commissioner is assisted by a Deputy Assistant Commissioner. The Deputy Assitant Commissioner shall, among other duties as assigned, have immediate responsibility for patent examination and for the organizational elements enumerated in paragraph 5.01, and shall perform the duties of the Assistant Commissioner during the latter's absence. There shall also be an Administrator for Documentation who shall have immediate responsibility for domestic and foreign patent documentation and the organization elements enumerated in paragraph 5.02.

c. The *Assistant Commissioner for Trademarks* (an Assistant Commissioner under 35 U.S.C. 3) shall provide administrative and policy direction to the trademark registration and related operations which consist of the organizational elements enumerated in Section 6. of this Order.

d. The *Solicitor* shall be the chief law officer of the Patent and Trademark Office and shall provide administrative and policy direction to organizational elements enumerated in Section 7, of this Order. Pursuant to Department Organization Order 10–6, the Solicitor shall be subject to the overall authority of the Department's General Counsel with respect to legal matters involving the Patent and Trademark Office, other than in connection with the issuance of patents or the registration of trademarks. The Solicitor shall be assisted by a Deputy Solicitor who shall perform the duties of the Solicitor during the latter's absence.

e. The *Assistant Commissioner for Administration* shall be the principal advisor to the Commissioner on the formulation and application of administrative policies. The Assistant Commissioner for Administration shall provide administrative and policy direction to the organizational elements enumerated in Section 8. of this Order. The Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner who shall perform the duties of the Assistant Commissioner during the latter's absence.

f. The *Assistant Commissioner for Finance and Planning* shall be the principal advisor to the Commissioner on financial and planning matters. The Assistant Commissioner shall provide administrative and policy direction to the organizations enumerated in Section 9. of this Order. The Assistant Commissioner shall be assisted by a Deputy Assistant Commissioner. Among other duties as assigned, the Deputy Assistant Commissioner also shall be the Director of Resource Management, with immediate responsibility for the organizational elements enumerated in paragraph 9.01.

SECTION 4. ORGANIZATIONS REPORTING TO THE COMMISSSONER

.01 The *Board of Appeals* shall be responsible for hearing and deciding appeals from adverse decisions of examiners upon applications for patent.

.02 The *Board of Patent Interferences* shall conduct interference proceedings and make final determinations in the Patent and Trademark Office as to priority of invention. The Board shall also hear and decide questions concerning property rights in inventions in the atomic energy and space fields brought before it under the provisions of Sections 2182 and 2456 (d) and (e) of Title 42, U.S.C.

.03 The *Office of Information Services* shall advise and represent the Commissioner on information matters; conduct programs fostering public understanding of the American patent system and of the functions, services and administrative publications of the Patent and Trademark Office; and develop publication policies,

.04 The *Office of Legislation and International Affairs* shall, subject to Department Organization Order 10–6, make studies and advise the Commissioner on policy and actions concerning matters which may require legislation or which involves international patent and trademark (intellectual property) matters; draft proposed legislation relating to patents and trademarks and advise on pending legislation affecting the Patent and Trademark Office; represent the

Commissioner in the negotiation or renegotiation of treaties and the negotiation of other new major international initiatives; assist in the development and implementation of related programs; coordinate or conduct in cooperation with other appropriate Patent and Trademark Office organizations, negotiations in matters relating to existing international programs; and maintain liaison with the Office of the Secretary, the General Counsel, other agencies, international and foreign bodies, members of the public, and appropriate congressional committees in such matters.

.05 The *Office of Equal Employment Programs*, under the immediate direction of the Deputy Commissioner, shall be responsible for the design, development, implementation, review, and maintenance of all Patent and Trademark Office Equal Employment Opportunity (EEO) programs; including EEO complaint processes, the Affirmative Action Plan, upward mobility programs and other special emphasis programs such as those for women, Hispanic-Americans, the handicapped, and all protected groups and classes of employees.

SECTION 5. ORGANIZATIONS REPORTING TO THE ASSISTANT COMMISSIONER FOR PATENTS

.01 Patent Examination Organizations.

a. The *Office of Patent Program Control* shall establish program activity targets and continually evaluate status against program objectives; provide training to examiners in patent practices and procedures; and provide planning evaluation and budget support to the examination organizations, and perform such other duties as assigned.

b. The *Patent Examining Groups* shall examine applications for patents to ascertain if the applicants are entitled to patents under the law and grant patents to those so entitled. Each examining group shall perform this function for patent applications falling within the generic category assigned to it. The number of examining groups and the coverage of the generic categories shall be determined by the Commissioner.

.02 Patent Documentation Organizations.

a. The *Office of Documentation Planning, Support and Control* shall analyze the examiner and public patent search files and all proposed programs concerning them; coordinate efforts in regard to numerical files; develop and maintain overall documentation plans relating to these files; define the form, content and accessibility of these files and insure such definition through periodic checks; initiate the acquisition and provision of patent documentation for these files; coordinate the development of an overall system, and the efforts of related implementing activities, to insure the accuracy and effective utilization of patent data; provide budgetary and other services for the documentation organizations; and establish performance standards and evaluation criteria for, and monitor and evaluate, the activities of the documentation organizations.

b. The *Office of International Patent Classification* shall direct Patent and Trademark Office initiatives designed to foster harmonization of the United States Patent Classification System with the International Patent Classification System. The Office shall also consult and participate with foreign counterparts representing national offices and appropriate international groups in further development and refinement of the International Patent Classification System. In carrying out such consultations and participations, it shall coordinate all related policy matters with the Office of Legislation and International Affairs.

c. The *Office of Micrographic Systems* shall develop and recommend plans for micrographic information systems including analyses of existing and proposed micrographic hardware and techniques suitable for meeting the particular demands of the U.S. Patent and Trademark Office. It shall also evaluate ongoing micrographic information systems in respect to the responsiveness of such systems to evolving informational needs. The foregoing shall be coordinated with other appropriate offices such as the Office of Automatic Data Processing Administration and the Office of Search Systems

d. The *Office of Search Systems* shall maintain a state-of-the-art awareness of machine-assisted information storage, access, retrieval, and display systems useful or potentially useful in searching patent documentation; participate with parties in the private and government sectors in cooperative programs designed to develop systems for Patent and Trademark Office utilisation; evaluate the potential of existing and cooperatively developed systems; initiate the acquisition and adaption of selected systems and direct the maintenance of all non-operational search and display systems (equipment and materials); conduct and evaluate pilot tests in Patent and Trademark Office operating environments; recommend operational establishment or discontinuance of evaluated systems; and monitor and evaluate the performance of operational systems.

e. The *Scientific Library* maintains collections of technical and scientific information such as foreign patents, periodicals, books and other publications, in printed or microfilm form, and provides related services and facilities, for use by the public and by examiners and other personnel in the internal operations of the Patent and Trademark Office.

f. The *Classification Groups* shall develop, implement and maintain subject matter classification systems for the organization of patent search files of prior art including the preparation of definitions, indexes, schedules, and related documentations. Each classification group shall perform this function for subject matter falling within the generic category (chemical, electrical, mechanical) assigned to it.

SECTION 6. ORGANIZATIONS REPORTING TO THE ASSISTANT COMMISSIONER FOR TRADEMARKS

.01 The *Office of Trademark Program Control* shall develop guidelines governing trademark examining procedures; establish program activity targets and continually evaluate status against program objectives; and provide instruction in trademark practice and procedures and coordinate trademark administrative support activities.

.02 The *Trademark Trial and Appeal Board* shall be responsible for hearing and deciding adversary proceedings involving interfering applications, oppositions to registration, cancellations, and concurrent use proceedings; and for hearing and deciding appeals from final refusals of the trademark examiners to allow the registration of trademarks.

.03 The *Trademark Examining Operation* shall be responsible for the classification of trademark applications into classes of goods and services, the examination and processing of these applications, and the registration of trademarks, service marks, and certification marks, and maintain the principal and supplemental registers of trademarks. The Trademark Examining Operation shall be composed of examining divisions, the number and coverage of such divisions to be determined by the Commissioner.

SECTION 7. OFFICES REPORTING TO THE SOLICITOR

.01 The *Office of the Solicitor* shall handle all litigation to which the Commissioner is a party and provide other legal services, including advice and assistance on legislative matters, and maintenance of the law library.

.02 The *Office of Government Employee Inventions* shall review questions of ownership of patents and rights to inventions made by Government employees in issues brought before it under Executive Order 10096 and shall make appropriate recommendations to the Commissioner for action on such questions.

SECTION 8. OFFICES REPORTING TO THE ASSISTANT COMMISSIONER FOR ADMINISTRATION

.01 The *Office of Automatic Data Processing Administration* shall coordinate automatic data processing resources for the Patent and Trademark Office; recommend to management the acceptance, updating or termination of all Patent and Trademark Office automatic data processing resources and contracts; provide management with regular reviews on the status of automatic data processing expenditures and utilization of resources; advise management on alternatives for meeting defined short and long range ADP requirements; coordinate ADP procurement and installation; operate a central computer facility for the Patent and Trademark Office responsive to user needs; conduct and review specified ADP feasibility studies; design, implement, operate and coordinate specialized ADP management information systems, including data collection, manipulation and dissemination; coordinate ADP liaison for the Patent and Trademark Office with the Department of Commerce and other Federal agencies; provide programming and systems design resources for approved projects based on requirements; provide technical assistance to the Patent and Trademark Office to fulfill needs as specified by the user.

.02 The *Office of General Services* shall plan and administer a broad Office-wide program of general services, including procurement control; property, space, and facilities management; communications, files, mail and correspondence, and forms management; administrative printing; and clearance of all requirements involving contractual procurements, in-

cluding liaison with the Department of Commerce, in connection therewith.

.03 The *Office of Patent and Trademark Services* shall provide materials and services to the public, many on a fee basis, as well as to examiners and other personnel for internal operations of the Patent and Trademark Office. It shall maintain a Public Search Room with a collection of U.S. patents; record assignments and other instruments for the transfer of property rights to patents and trademarks; furnish copies of patents, trademark registrations and office records; and provide drafting services. It shall also conduct an initial examination of patent applications for compliance with law and regulations as to form and certain matters of factual content; grant or deny a filing date based on such examination, and forward to the Examining Groups those granted a filing date; acknowledge the acceptance or rejection of applications for examination; and maintain records on the status and location of all applications.

.04 The *Office of Personnel* shall administer activities relating to recruitment, placement, employee relations, training and career development, incentive awards, performance rating, position classification and wage administration, group management relations, and various employee benefit programs.

.05 The *Office of Publications* shall schedule and manage the processing and movement of allowed patent application files in procuring the creation of full patent text machine language data base and the composition and printing of weekly issues and related announcements in the Official Gazette; provide requisition and scheduling services for trademark publications; monitor the quality or performance by contributing sources and maintain close liaison with U.S. Government Printing Office; and prepare and issue patent grants and periodic publications of patent indexes.

SECTION 9. OFFICES REPORTING TO THE ASSISTANT COMMISSIONER FOR FINANCE AND PLANNING

.01 Resource Management Organizations.

a. The *Office of Finance* shall develop and maintain the financial accounting system of the Patent and Trademark Office, perform accounting operations for the revenue, trust funds, and appropriation of the Patent and Trademark Office, including maintenance of general accounts and related fiscal records, preparation of financial statements and reports, audit and certification of vouchers for payment, issuance of deposit account statements, initiation of action to collect amounts due the Patent and Trademark Office, and administration of the payroll system and related employee accounts; and provide financial advice.

b. The *Office of Budget* shall develop and maintain Patent and Trademark Office budget and fiscal plans; provide advice and staff to assist line managers in preparing, reviewing, justifying, presenting and executing the Patent and Trademark Office's budget; develop budgetary policies and procedures for the entire Patent and Trademark Office budget process; maintain budgetary accountability for available funds; maintain external liaison on budgetary matters; and provide assistance in integrating program plans with the budgetary process.

c. The *Office of Planning and Evaluation* shall coordinate and help develop medium and long range plans for all Patent and Trademark Office programs; develop and administer a system for integrating the Patent and Trademark Office planning process with the budgetary process; coordinate and help develop goals, objectives, and strategies for the operating program offices of the Patent and Trademark Office, and evaluate the effectiveness of the administration of the programs against those goals, objectives and strategies.

.02 The *Office of Management and Organization* shall develop and/or receive requests for management improvement systems, programs or projects, including studies for work measurement, resource utilization, workflow analyses, computer systems, operations research and other operational problems and programs and determine the best resource(s) for analyses, resolution, and implementation; conduct organizational reviews; conduct, coordinate or assign studies on resource utilization, procedures or workflow analyses; coordinate work measurement studies; manage Patent and Trademark Office policy orders and administrative instructions and issuances; develop and maintain statistical data; and develop and manage a historical file on all management studies and statistical data developed.

.03 The *Office of Technology Assessment and Forecast* shall continually assess the status of technological activities in all countries; compare inventive activity in the United States relative to other nations; and forecast development on a worldwide basis.

.04 The *Office of Quality Review* shall establish criteria for reviewing, and perform a review of the quality of examination of patent and trademark applications which have been examined. The Office shall review: the application of substantive statutory criteria for patentability or registrability; the adequacy of the examiner's search of prior patent, trademark or other literature; and the adherence to approved examining procedures. The Office shall provide information to managers and examiners on the results of its review, and make recommendations for maintaining or improving the quality of examination.

SECTION 10. EFFECT ON OTHER ORDERS

This Order supersedes Department Organization Order 30-3B of August 19, 1976, as amended.

SIDNEY A. DIAMOND,
Commissioner of Patent and Trademarks.

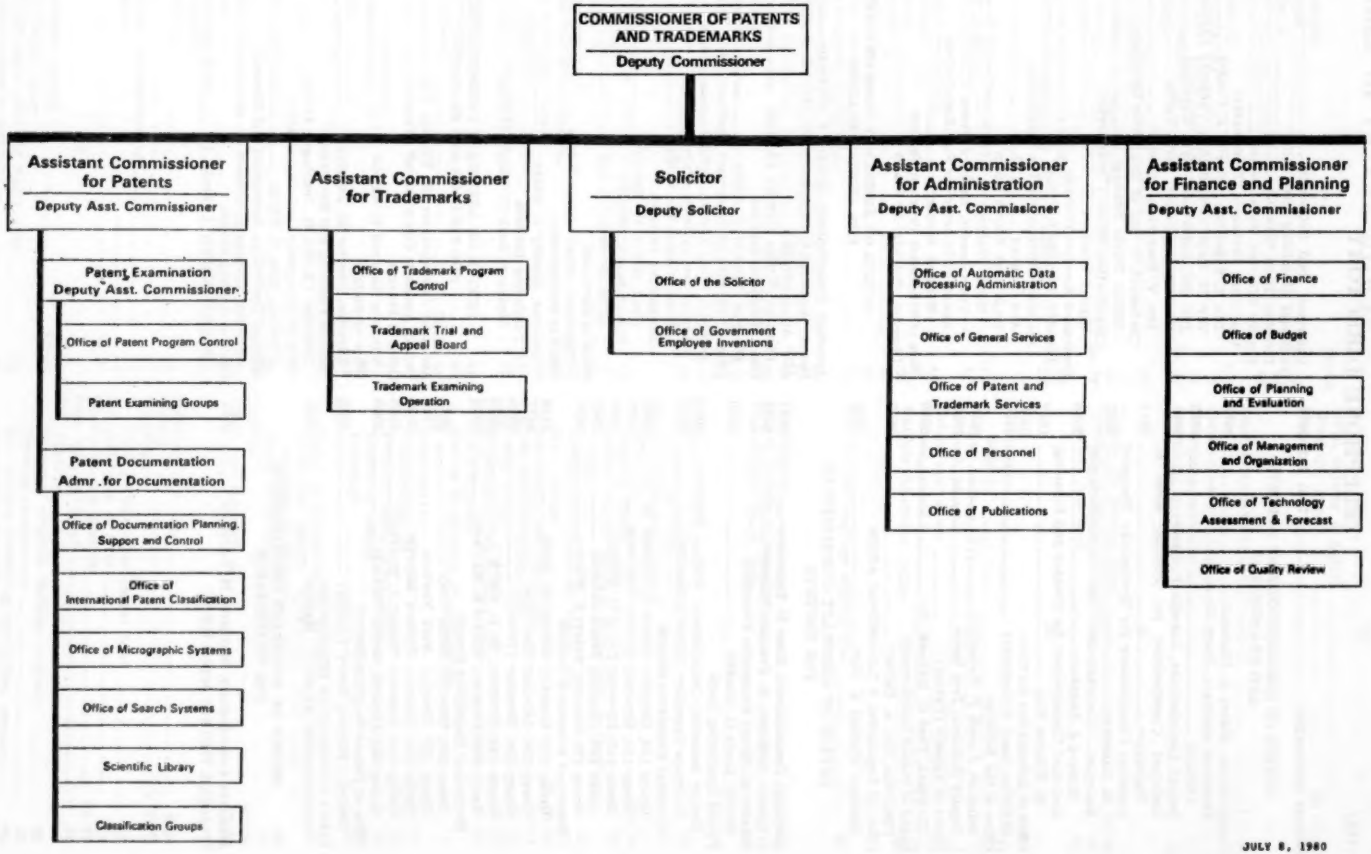
Approved:

Assistant Secretary for Science and Technology.

Acting Assistant Secretary for Administration.

[1001 O.G. 10]

U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office


COMMISSIONER OF PATENTS AND TRADEMARKS
Deputy Commissioner
Assistant Commissioner for Patents
Deputy Asst. Commissioner
Patent Examination Deputy Asst. Commissioner
Office of Patent Program Control
Patent Examining Groups
Patent Documentation Admr. for Documentation
Office of Documentation Planning, Support and Control
Office of International Patent Classification
Office of Micrographic Systems
Office of Search Systems
Scientific Library
Classification Groups
Assistant Commissioner for Trademarks
Office of Trademark Program Control
Trademark Trial and Appeal Board
Trademark Examining Operation
Solicitor
Deputy Solicitor
Office of the Solicitor
Office of Government Employee Inventions
Assistant Commissioner for Administration
Deputy Asst. Commissioner
Office of Automatic Data Processing Administration
Office of General Services
Office of Patent and Trademark Services
Office of Personnel
Office of Publications
Assistant Commissioner for Finance and Planning
Deputy Asst. Commissioner
Office of Finance
Office of Budget
Office of Planning and Evaluation
Office of Management and Organization
Office of Technology Assessment & Forecast
Office of Quality Review

JULY 8, 1980

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TELEPHONE DIRECTORY

General Information ..... (703) 557–3080

OFFICE OF COMMISSIONER OF PATENTS AND TRADEMARKS

Commissioner, Sidney A. Diamond 3071
Executive Assistant, Barry Grossman (Acting) 3073
Deputy Commissioner, Lutrelle F. Parker 3961
Assistant Commissioner for Patents, Rene D. Tegtmeyer 3811
Assistant Commissioner for Trademarks, Margaret M. Laurence 3061
Assistant Commissioner for Administration, Richard J. Shakman 3055
Assistant Commissioner for Finance and Planning, S. William Yost 1572
Office of Information Services
Director, Isaac Fleischmann 3428
Office of the Solicitor
Solicitor, Joseph F. Nakamura 3525
Deputy Solicitor, Jere Sears 3527
Board of Appeals (Patent)
Chairman, Fred C. Mattern, Jr. 3380
Board of Patent Interferences
Chairman, Ian A. Calvert 3625
Office of Legislation & International Affairs
Director, Michael K. Kirk 3065

OFFICE OF ASSISTANT COMMISSIONER FOR PATENTS

Assistant Commissioner, Rene D. Tegtmeyer 3811
Special Assistant, R. Franklin Burnett 3054
Manual of Patent Examining Procedure
Editor, Louis O. Maassel 3070
Patent Examining Corps
Deputy Assistant Commissioner, William Feldman 2012
Petitions Examiner, Alfred L. Leavitt 3337
Chemical Examining Groups
Group 110, Director, Dennis E. Talbert, Jr. 1360
Group 120, Director, Charles Van Horn 3575
Group 140, Director, James O. Thomas 3800
Group 160, Director, Samih Zaharna 3547
Group 170, Director, Robert F. White 3680
Electrical Examining Groups
Group 210, Director, Samuel W. Engle 2488
Group 220, Director, Ken Cage 2877
Group 230, Director (Vacant) 5088
Group 240, Director, Al L. Smith 2900
Group 250, Director, Samuel S. Matthews 2084
Mechanical Examining Groups
Group 310, Director, Bobby Gray 2921
Group 320, Director, Mark Newman 3320
Group 330, Director, Richard Aegerter 3330
Group 340, Director, Donley J. Stocking 3340
Group 350, Director, Gerald Forlenza 3000
Office of Patent Program Control
Director, Richard Rouck (Acting) 3955
Patent Documentation Organizations
Administrator, Alfred C. Marmor 3051

OFFICE OF ASSISTANT COMMISSIONER FOR TRADEMARKS

Assistant Commissioner, Margaret M. Laurence 3061
Trademark Trial and Appeal Board
Chairman, Saul Lefkowitz 3551
Trademark Examining Operation
Director, Herb Wamsley 3268
Deputy Director, John Demos 3268
Examining Divisions (Trademarks)
Div. I, Supervisor, Charles J. Condro 3273
Div. II, Supervisor, Beth A. Chapman (Acting) 3277
Div. III, Supervisor, Myra Kurzbard 9560
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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 15, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
June 17, 1980. *Commissioner of Patents and Trademarks.*

Examination

Pursuant to the provisions of 37 C.F.R. 1.341(c), an examination for persons seeking registration before the United States Patent and Trademark Office as patent attorneys or agents will be held on Tuesday, *April 7, 1981.*

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent and Trademark Office in patent cases must, pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent and Trademark Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

37 C.F.R. 1.341(f) provides, in pertinent part, "Officers and employees of the United States who are disqualified by statute (18 U.S.C. 293, 205) from practicing as attorneys or agents in proceedings or other matters before Government departments or agencies, may not be registered, * * * but officers or employees whose official duties require the preparation and prosecution of applications for patent may be registered (on compliance with the regulations in this part) or recognized to practice, to the extent necessary to carry out their official duties." If you are an officer or employee of the United States, your application for registration *must* be accompanied by your supervisor's *verified statement* that your official duties as a United States officer or employee require that you prepare and prosecute applications for patent.

The examination will be given under the supervision of the Office of Personnel Management (formerly Civil Service Commission), and may be taken in any of the cities in which the Office of Personnel Management regularly conducts examinations. Applications to take the examination must be filed in the Patent and Trademark Office together with a $35 fee not later than *January 31, 1980.*

Application blanks may be obtained from the Clerk of the Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va., or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

LUTRELLE F. PARKER,
Dec. 10, 1980. *Chairman, Committee on Enrollment.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,831,662, Re. S.N. 194,535, Filed Oct. 6, 1980, Cl. 164/362, CASTING MOLD WITH CONSTRICTING DEVICE, John R. Nieman, et al., Owner of Record: *Caterpillar Tractor Co., Peoria, Ill.,* Attorney or Agent: Ralph E. Walters, et al., Ex. Gp.: 324

3,847,063, Re. S.N. 020,202, Filed Nov. 16, 1979, Cl. 92/100, VACUUM OPERABLE UNITS FOR IGNITION DISTRIBUTORS, William Harold Cooksey, Owner of Record: *Joseph Lucas (Industries) Limited, Birmingham, England,* Attorney or Agent: John Clarke Holman, et al., Ex. Gp.: 341

4,116,853, Re. S.N. 189,742, Filed Sep. 23, 1980, Cl. 252/142, COMPOSITION FOR CLEANING ALUMINUM AT LOW TEMPERATURES, Robert E. Binns, Owner of Record: *Amchem Products, Inc., Ambler, Pa.,* Attorney or Agent: Ernest G. Szoke, et al., Ex. Gp.: 166

4,129,397, Re. S.N. 189,771, Filed Sep. 22, 1980, Cl. 404/14, ROAD SURFACE MARKING PREFABRICATED TAPE MATERIAL, HAVING RETROREFLECTIVE COMPOSITE ELEMENTS ASSOCIATED THERETO, Ludwig Eigenmann, Owner of Record: *Inventor,* Attorney or Agent: Michael J. Striker, et al., Ex. Gp.: 352

PATENT NOTICES

Certificates of Correction for the Week of Jan. 6, 1981

Re. 29,331	4,205,401	4,217,996	4,224,120
D. 253,540	4,205,748	4,218,019	4,224,159
4,065,398	4,206,168	4,218,461	4,224,752
4,068,817	4,206,664	4,218,558	4,224,835
4,096,372	4,207,119	4,218,683	4,225,460
4,124,314	4,210,121	4,218,933	4,225,678
4,140,641	4,210,565	4,219,012	4,225,930
4,150,088	4,210,885	4,219,139	4,225,981
4,158,438	4,211,671	4,219,446	4,226,576
4,160,877	4,211,689	4,219,761	4,226,596
4,181,796	4,212,919	4,220,466	4,226,643
4,188,564	4,213,251	4,220,535	4,226,898
4,189,434	4,213,714	4,220,727	4,227,134
4,191,046	4,213,775	4,221,216	4,227,361
4,194,243	4,214,126	4,221,240	4,227,688
4,194,949	4,214,257	4,221,626	4,227,702
4,196,351	4,214,608	4,221,833	4,227,738
4,197,120	4,215,041	4,221,947	4,227,788
4,197,812	4,215,158	4,221,997	4,227,882
4,200,137	4,215,205	4,222,305	4,227,918
4,200,362	4,215,408	4,222,529	4,228,130
4,202,186	4,215,531	4,222,784	4,228,197
4,203,891	4,216,329	4,223,039	4,228,253
4,203,924	4,216,788	4,223,221	4,228,290
4,204,102	4,217,218	4,223,450	4,228,911
4,204,633	4,217,351	4,223,539	4,229,708
4,205,319	4,217,595	4,223,814	4,231,745
			4,236,317

Dedications

3,470,716.—*Robert R. Candor,* Miami Township and *James T. Candor,* Washington Township, Ohio. ELECTROSTATIC APPARATUS. Patent dated Oct. 7, 1969. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

3,491,456.—*Robert R. Candor,* Miami Township and *James T. Candor,* Washington Township, Ohio. ELECTROSTATIC LIQUID REMOVAL APPARATUS AND METHOD. Patent dated Jan. 27, 1970. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

3,543,408.—*Robert R. Candor,* Miami Township and *James T. Candor,* Washington Township, Ohio. LIQUID-REMOVING APPARATUS AND METHOD. Patent dated Dec. 1, 1970. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

3,546,783.—*Robert R. Candor,* Miami Township and *James T. Candor,* Washington Township, Ohio. ELECTROSTATIC APPARATUS. Patent dated Dec. 15, 1970. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

3,633,282.—*Robert R. Candor,* Miami Township and *James T. Candor,* Washington Township, Ohio. LIQUID-REMOVING APPARATUS AND METHOD. Patent dated Jan. 11, 1972. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

3,641,680.—*Robert R. Candor,* Miami Township and *James T. Candor,* Washington Township, Ohio. LIQUID-REMOVING APPARATUS AND METHOD. Patent dated Feb. 15, 1972. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

3,667,130.—*Robert R. Candor,* Miami Township and *James T. Candor,* Washington Township, Ohio. LIQUID-REMOVING APPARATUS AND METHOD. Patent dated June 6, 1972. Dedication filed Oct. 17, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

4,196,409.—*Hisashi Juba,* Rye, N.Y. MULTIPLE FUSE DEVICE. Patent dated Apr. 1, 1980. Dedication filed Mar. 31, 1980, by the inventor.

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

4,052,285.—*John Vincent Dobson,* Hartlepool, England. ION SELECTIVE ELECTRODES. Patent dated Oct. 4, 1977. Disclaimer filed Oct. 15, 1980, by the assignee, *National Research Development Corporation.*

Hereby enters this disclaimer to all claims of said patent.

4,081,686.—*Gerrit Nieuweboer,* Claymont, Del. X-RAY FILM CASSETTE AND METHOD OF MAKING SAME. Patent dated Mar. 28, 1978. Disclaimer filed Nov. 12, 1980, by the assignee, *E. I. du Pont de Nemours and Company.*

Hereby enters this disclaimer to claim 5 of said patent.

4,104,156.—*John K. Fletcher,* Hot Springs, Ark. DETACHABLE SLING LETDOWN APPARATUS FOR LUMBER SORTER. Patent dated Aug. 1, 1978. Disclaimer filed Nov. 4, 1980, by the assignee, *Harvey Engineering and Manufacturing Corporation.*

Hereby enters this disclaimer to claim 1 of said patent.

4,125,988.—*Francis E. Schlueter,* Des Moines, Iowa. COTTON HARVESTER. Patent dated Nov. 21, 1978. Disclaimer filed Oct. 17, 1980, by the assignee, *Deere & Company.*

Hereby enters this disclaimer to all the claims, claims 1–4 of said patent.

4,198,139.—*John Michael Payne,* Peterborough, England. ELECTROSTATIC CAMERAS. Patent dated Apr. 14, 1980. Disclaimer filed Nov. 3, 1980, by the inventor.

Hereby enters this disclaimer to claims 7, 8, 11 and 12 of aid patent.

National Technical Information Service

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The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

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DOUGLAS J. CAMPION,
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National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch, Administration Service Division, Federal Bldg., Science and Education Administration, Hyattsville, Md. 20782

Patent application 6-027,695. High-Performance, Lightweight Structural Particleboard. Filed Apr. 6, 1979.

Patent application 6-037,242. Laboratory Pesticide Spray Chamber. Filed May 9, 1979.

Patent application 6-073,474. Slope Stability Warning Device for Articulated Tractors. Filed Sept. 7, 1979.

Patent application 6-102,484. Running Skyline Intermediate Support and Multi-Span Carriage. Filed Dec. 11, 1979.

Patent application 6-115,538. Intermediate Support for a **Skyline Logging System. Filed Jan. 25, 1980.**

Patent application 6-152,874. Method and Apparatus for Edgewise Compression Testing of Flat Sheets. Filed May 23, 1980.

Patent application 6-156,434. Apparatus for Planting Seeds. Filed June 4, 1980.

Patent 4,201,210. Veterinary Ocular Ring Device for Sustained Drug Release. Filed Nov. 28, 1977. Patented May 6, 1980. Not available NTIS.

Patent 4,209,433. Method of Bonding Particle Board and the Like Using Polyisocyanate/Phenolic Adhesive. Filed Dec. 19, 1978. Patented June 24, 1980. Not available NTIS.

Patent 4,210,415. Shrinkproofing of Fabrics of Wool. Filed Apr. 7, 1977. Patented July 1, 1980. Not available NTIS.

Patent 4,212,800. Inhibition of Lanthionine Formation During Alkaline Treatment of Keratinous Fibers. Filed Sept. 26, 1978. Patented July 15, 1980. Not available NTIS.

Patent 4,214,330. Method for Treatment of Fibers With Ozone-Steam Mixtures. Filed Feb. 23, 1979. Patented July 29, 1980. Not available NTIS.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents Washington, D.C. 20505

Patent application 6-011,018. Fiber Optics Welder. Filed Feb. 9, 1979.

Patent application 6-016,036. Air Ejector Augmented Compressed Air Energy Storage System. Filed Feb. 28, 1979.

Patent application 6-021,141. Method of Determining Interwell Oil Field Fluid Saturation Distribution. Filed Mar. 16, 1979.

Patent application 6-022,895. Improved Tool Grinding Machine. Filed Mar. 22, 1979.

Patent application 6-028,740. High Energy KrCl Electric Discharge Laser. Filed Apr. 10, 1979.

Patent application 6-028,742. Shuttleless Toroid Winder. Filed Apr. 10, 1979.

Patent application 6-028,778. High Energy XeBr Electric Discharge Laser. Filed Apr. 10, 1979.

Patent application 6-031,809. Optical Device. Filed Apr. 20, 1979.

Patent application 6-034,804. Improved Method for Enhanced Oil Recovery. Filed Apr. 30, 1979.

Patent application 6-037,078. Long-Term Ice Storage for Cooling Applications. Filed May 8, 1979.

Patent application 6-037,079. Free Piston Inertia Compressor. Filed May 8, 1979.

Patent application 6-037,982. Laser Beam Alignment Apparatus and Method. Filed May 10, 1979.

Patent application 6-039,412. Compressed Air Energy Storage System. Filed May 15, 1979.

Patent application 6-039,985. Small Diameter, Deep Bore Optical Inspection System. Filed May 17, 1979.

Patent application 6-041,364. Chromatographic Hydrogen Isotope Separation. Filed May 22, 1979.

Patent application 6-062,372. Method for Detecting Trace Impurities in Gases. Filed July 31, 1979.

Patent application 6-067,855. Improved Method and Apparatus for Chromatographic Quantitative Analysis. Filed Aug. 20, 1979.

Patent application 6-069,151. Photolytic Separation of Isotopes in Cryogenic Solution. Filed Aug. 23, 1979.

Patent application 6-069,152. Apparatus for Use in Rapid and Accurate Controlled-Potential Coulometric Analysis. Filed Aug. 23, 1979.

Patent application 6-074,288. Method for Inhibiting Corrosion of Nickel-Containing Alloys. Filed Sept. 11, 1979.

Patent application 6-076,527. Leak Test Fitting. Filed Sept. 18, 1979.

Patent 3,344,928. Humic Acid as an Additive in a Process of Forming a Salt-Rejecting Membrane. Patented Oct. 3, 1967.

Patent 3,431,201. Hyperfiltration Process Having Ion Exchange Pretreatment. Patented Mar. 4, 1969.

Patent 3,449,245. Method of Separating Salts From Aqueous Solutions. Patented June 10, 1969.

Patent 3,503,789. Method of Making a Dynamic Solute-Rejecting Membrane. Patented Mar. 31, 1970.

Patent 3,577,339. Filtration Method of Separating Liquids From Extraneous Materials. Patented May 4, 1971.

Patent 4,161,023. Up-and-Down Chopper Circuit. Filed Sept. 7, 1977. Patented July 10, 1979. Not available NTIS.

Patent 4,162,227. Dielectric Gas Mixtures Containing Sulfur Hexafluoride. Filed Feb. 24, 1976. Patented July 24, 1979. Not available NTIS.

Patent 4,162,593. Tool Holder for Preparation and Inspection of a Radiused Edge Cutting Tool. Filed Feb. 28, 1978. Patented July 31, 1979. Not available NTIS.

Patent 4,167,819. Pressure Regulator. Filed Dec. 5, 1977. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,169,280. Method for Making Glass Nonfogging. Filed July 13, 1978. Patented Sept. 25, 1979. Not available NTIS.

Patent 4,171,464. High Specific Heat Superconducting Composite. Filed June 27, 1977. Patented Oct. 16, 1979. Not available NTIS.

Patent 4,172,224. Process for the Detection of Micro-Cracks. Filed Oct. 24, 1978. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,174,728. Sliding-Gate Valve. Filed Nov. 14, 1977. Patented Nov. 20, 1979. Not available NTIS.

Patent 4,176,326. CF, Laser. Filed Oct. 20, 1977. Patented Nov. 27, 1979. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health, Chief, Patent Branch Westwood Bldg., Bethesda, Md. 20205

Patent application 6-142,745. Antineoplastic 1-Hydroxy-4-(Substituted Aminoalkylamino)-Anthraquinones. Filed Apr. 22, 1980.

Patent 4,188,378. Anticancer and Antiviral Activity of 9-Beta-D-Arabinofuranosyl-2-Fluoroadenine. Filed Jan. 4, 1978. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,189,583. Synthesis of 4A-Aryl-Decahydroisoquinolines. Filed Apr. 26, 1978. Patented Feb. 19, 1980. Not available NTIS.

Patent 4,194,240. Precision Envelope Detector and Linear Rectifier Circuitry. Filed May 2, 1978. Patented Mar. 18, 1980. Not available NTIS.

Patent 4,194,877. Dye-Containing Polymer Composition. Filed Nov. 28, 1977. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,206,307. Preparation of Tetrahydrofolic Acid From Folic Acid. Filed Nov. 7, 1978. Patented June 3, 1980. Not available NTIS.

Patent 4,217,496. Portable Instrument for Measuring Neutron Energy Spectra and Neutron Dose in a Mixed N-Gamma Field. Filed Mar. 14, 1978. Patented Aug. 12, 1980. Not available NTIS.

Patent 4,217,497. Portable Instrument for Measuring Neutron Energy Spectra and Neutron Dose in a Mixed N-**Gamma Field. Filed June 16, 1978. Patented Aug. 12, 1980.** Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts., NW., Washington, D.C. 20240

Patent application 6-104,922. Portable Airborne Droplet Impactor Sampler and Method. Filed Dec. 18, 1979.

Patent application 6-108,206. Sample Mount for X-Ray Diffraction. Filed Dec. 27, 1979.

Patent application 6-114,536. Mounting Block for a Coal Bit Utilizing a Belleville-Type Spring. Filed Jan. 23, 1980.

Patent application 6-114,546. Mounting Block for a Coal Bit Utilizing a Belleville-Type Spring. Filed Jan. 23, 1980.

Patent application 6-118,959. Method of and Apparatus for Minimizing Coal Dust Production in Longwall Mining Machine. Filed Feb. 6, 1980.

Patent application 6-136,126. Slideboard Device for Underground Mine Face Ventilation. Filed Mar. 31, 1980.

Patent application 6-142,946. Flexible Continuous Grout **Filled Packer for Use With a Water Infusion System. Filed Apr. 23, 1980.**

Patent application 954,026. Induced Air Flow Self-Cleaning **Spray Nozzle. Filed Oct. 23, 1978. Patented Apr. 29, 1980.** Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Depending upon the library, the patents may be available in microfilm, in bound volumes of paper copies, or in some combination of both. Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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California	Los Angeles Public Library	(213) 626–7555 Ext. 274
	Sacramento: California State Library	(916) 322–4572
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Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Minnesota	Minneapolis Public Library & Information Center	(612) 372–6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862–1777
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Public Library of Cincinnati & Hamilton County	(513) 369-6936
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255–7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448–1224**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 12 o'clock noon and 5 :00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 29, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus: Metal Stock: Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-23-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-10-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	9-11-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	12-12-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-5-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-8-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	7-2-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-9-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-21-78
DESIGNS, GROUP 290—Vacant Industrial Arts; Household, Personal and Fine Arts.	1-8-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-18-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-20-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-1-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-1-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during November 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,109,176 to 3,112,486, inclusive
Plant Patents ..... Numbers 2,295 to 2,323, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JANUARY 6, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

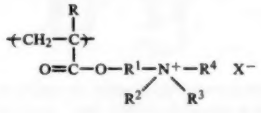
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T100,201
INDIGO DYEING OF POLYESTER FIBERS

Francis M. Logullo, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

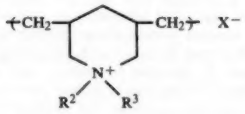
Filed Feb. 7, 1980, Ser. No. 119,212
Int. Cl.³ D06P *1/22, 7/00*
U.S. Cl. 8—495
No Drawing. 19 Pages Specification

Polyester fiber can be dyed with indigo so as to possess wash-down and fading characteristics similar to indigo-dyed cotton fibers provided they are first coated with a polymeric salt having the following repeating units:



A.

with from 0 to 75 mol % of another ethylenically unsaturated monomeric unit,
or



B.

wherein
R is hydrogen, methyl or ethyl
R^1 is a divalent hydrocarbon radical of 1 to 4 C atoms
R^2 and R^3 are lower alkyl (from 1 to 4 C atoms)
R^4 is hydrogen, hydroxyethyl or lower alkyl (from 1 to 4 C atoms)
X^- is an anion
Preferably, in Formula A, R^1 contains 2 carbon atoms; R^2=R^3=R^4=methyl; and X^- is 83 mol % CH_3SO_4— and 17 mol % $C_{18}H_{35}SO_4$—.

T100,202
PROCESS FOR CALENDERING KNIT FABRICS

Winfried T. Holfeld, 700 Thornby Rd., Wilmington, Del. 19803

Filed Sep. 6, 1979, Ser. No. 73,017
Int. Cl.³ D06F *15/02*
U.S. Cl. 38—144
No Drawing. 13 Pages Specification

Light weight knit fabrics of reduced air permeability and light transmission as well as decreased susceptibility to snagging are provided by a calendering process that involves selecting a dyed knit fabric composed of fibers from the group of (1) at least 40% by weight of polyester fiber and from 0 to 60% by weight of a fiber of the group consisting of wool, cotton, nylon, and acrylic fiber or (2) about 5–30% by weight of a spandex fiber and from 70 to 95% by weight of a fiber of the group consisting of wool, cotton, nylon, polyester and acrylic fiber and calendering the back side of the fabric at a calender roll temperature between about 200° to 320° F., at a calender roll pressure of between about 0.5 to 1.0 ton per linear inch and at a calender roll surface speed of from 10 to 30 yards per minute.

T100,203
LABEL ADHESIVE

John E. Lauck, Spring, Tex., assignor to Shell Oil Company

Continuation of Ser. No. 15,531, Feb. 23, 1979, abandoned. This application May 9, 1980, Ser. No. 148,469
Int. Cl.³ B31D *1/02;* **C08K** *5/01;* **C08L** *53/02*
U.S. Cl. 428—40
No Drawing. 9 Pages Specification

A label adhesive composition having the necessary balance of holding power, bleed and die cuttability comprises 40 to 70 parts of a linear or radial ABA-type monoalkenyl arene/conjugated diene block copolymer, 60 to 30 parts of an AB two-block copolymer, 20 to 300 parts of a tackifying resin and 0 to 100 parts of a rubber compounding oil.

T100,204
COATING COMPOSITION

Doyle A. Weemes, 1603 Moore Ave., Greeneville, Tenn. 37743; Robert W. Seymour, 1341 Belmeade Dr., and George J. O'Neill, 3805 Thornton Dr., both of Kingsport, Tenn. 37664

Continuation of Ser. No. 914,714, Jun. 12, 1978, abandoned. This application Apr. 10, 1980, Ser. No. 139,066
Int. Cl.³ C08G *63/18*
U.S. Cl. 264—177 R
No Drawing. 12 Pages Specification

Disclosed is a primer coating composition for use between thermoplastic materials and metal. The primer composition comprises a polyester, at least half of the dibasic acid components of which are selected from terephthalic acid, isophthalic acid, 1,4-cyclohexanedicarboxylic acid or a mixture thereof. The polyester is either amorphous, or may contain some crystallinity to result in a melting point below about 175° C. The heat of fusion of the polyester is less than about 10 calories per gram. The primer is especially useful in promoting adhesion between metal foil and cellulose acetate butyrate laminated thereto.

REISSUES

JANUARY 6, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

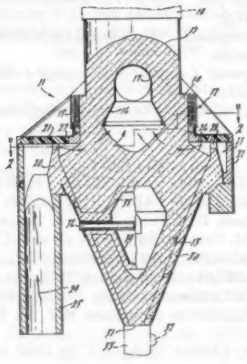
Re. 30,469
PREHEATER FOR LIME KILN

Marshall F. Parsons, Washington, D.C., assignor to Detroit Lime Company, Detroit, Mich.

Original No. 3,766,663, dated Oct. 23, 1973, Ser. No. 232,579, Mar. 7, 1972. Application for reissue Apr. 27, 1978, Ser. No. 901,019

Int. Cl.[2] F26B *17/12*

U.S. Cl. 34—168 13 Claims



1. In a preheater for particulate materials such as limestone, a refractory lined vessel having an upper material intake section, an exhaust offtake concentrically mounted in said section, means for feeding material into said section, a gas intake section below said material intake section, a plurality of circumferentially arranged ports around said gas intake section, means feeding hot gases to said ports, whereby the gases will flow radially inwardly through said material, a material holding section extending downwardly from said gas intake section, said material holding section being entirely below said ports and being sufficiently deep to permit heat to be absorbed by the interiors of the particles of material, [, and a material discharge port at the bottom of said material holding section] *the depth of said material holding section relative to the height of said gas intake section being so great that substantially the entire material holding section is remote from the path of gases flowing into said gas intake section, said material holding section being so constructed that little gas flow will take place in said holding section, a material discharge port at the bottom of said material holding section, and feeding means connected to said material discharge port and controlling the retention time of material in said holding section so as to cause the high surface temperatures developed on each particle to be diffused substantially into its entire volume.*

Re. 30,470
ADDRESS PRINTING MACHINE WITH ROLLER PLATENS AND METHOD

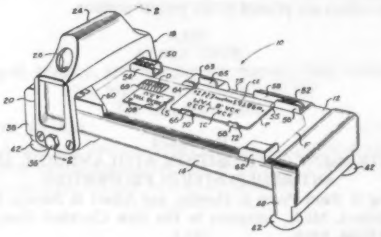
Dean W. Johnson, Euclid, Ohio, assignor to AM International, Inc., Los Angeles, Calif.

Original No. 3,272,120, dated Sep. 13, 1966, Ser. No. 405,673, Oct. 22, 1964. Application for reissue Apr. 27, 1978, Ser. No. 901,002

Int. Cl.[3] B41F *3/04*

U.S. Cl. 101—269 7 Claims

1. A printing machine of the character described comprising means for holding a printing device in printing position in a plane; a platen carriage reciprocable adjacent said printing position in a path substantially parallel to the plane of the printing device; two roller platens rotationally supported on said carriage in end-to-end relation with their axes extending transversely of the direction of carriage motion and each movable between an extended position relative to said carriage in which its axis is shifted towards the plane of the printing device and a retracted position relative to said carriage in which its axis is more remote from the plane of the printing device than



said extended position; means for shifting either platen to one or the other of said extended and retracted positions and simultaneously shifting the other of said platens to the opposite position; and means adjacent the carriage when the same is at each end of its path for operating said shifting means so that one platen is extended during motion of the carriage in one direction and the other is extended during motion of the carriage in the other direction.

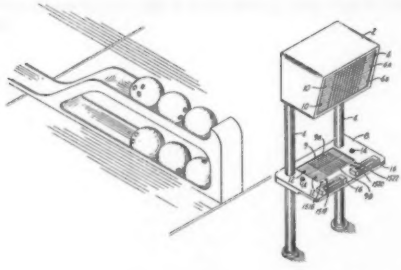
Re. 30,471
AUTOMATIC BOWLING SCORE COMPUTING AND DISPLAY DEVICE

Eugene E. Reynolds, Richmond, Calif., assignor to Brunswick Corporation, Chicago, Ill.

Original No. 3,738,652, dated Jun. 12, 1973, Ser. No. 196,039, May 16, 1962. Continuation of Ser. No. 697,632, Nov. 20, 1957, abandoned. Application for reissue Dec. 29, 1978, Ser. No. 974,626

Int. Cl.[3] A63D *5/04*

U.S. Cl. 273—54 C 266 Claims



82. *An apparatus for calculating scores of a bowling game wherein normally first and second balls are bowled to knock down pins during each of a succession of scoring frames comprising a plurality of registers each corresponding to a bowler and adapted to receive and store score values of a corresponding bowler, means for entering information representing pinfall for each of said first*

and second balls, means responsive to the entry of pinfall for at least one of said balls, to cause the apparatus to undergo a cycle of operation, means operable during said cycle serving to add pinfall corresponding to a first ball to a preceding frame when a preceding frame score requires such addition, means operable during said cycle for adding the total pinfall corresponding to both balls to the preceding frame when a strike has been scored in the preceding frame, means operable during said cycle serving to condition the apparatus to add pinfall from succeeding frames when the score requires such addition, means operable during said cycle to add pinfall during said frame if the pinfall is less than 10, [An apparatus as in claim **81** including additionally] printing means responsive to said adding means on completion of a frame score value for printing the score value, and means operable during said cycle for controlling the printing means so that score values are printed in the proper position.

Re. 30,472

DETERGENT COMPOSITION WITH ANTISOIL AND ANTIREDEPOSITION PROPERTIES

Arthur S. Teot; Percy J. Hamlin, and Albert B. Savage, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Original No. 4,138,352, dated Feb. 6, 1979, Ser. No. 878,122, Feb. 3, 1978. Continuation of Ser. No. 775,136, Mar. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 679,536, Apr. 23, 1976, abandoned. Application for reissue Aug. 20, 1979, Ser. No. 68,293

Int. Cl.[3] **C08B** *11/193;* **C11D** *3/37;* **D06M** *15/04, 15/24*

U.S. Cl. 252—135 **4 Claims**

1. A detergent composition wherein the essential components thereof consist of

(a) about 20 percent by weight of a C_8–C_{22} alkyl monoether of a polyethylene glycol of about 5–20 alkylene oxide units,

(b) about 60 percent of sodium sesquicarbonate,

(c) about 10 percent of sodium silicate having a ratio of SiO_2/Na_2O of about 2–3/1,

(d) about 0.1–2 percent of a hydroxybutylmethylcellulose having a DS of about 1.5–2.3 and an MS of about 0.01–0.6, *and a viscosity of about 20–200 cps. in 2 percent aqueous solution at 20° C.* and

(e) about 10 percent of Na_2SO_4.

Re. 30,473

BENZOPHENONE GLYCINAMIDE DERIVATIVES

Cedric H. Hassall, Welwyn; William H. Johnson, Hitchin; Antonin Krohn, London; Carey E. Smithen, Welwyn Garden City, and William A. Thomas, Eaton Ford, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Original No. 4,007,219, dated Feb. 8, 1977, Ser. No. 605,580, Aug. 18, 1975. Application for reissue Jul. 31, 1978, Ser. No. 929,383

Claims priority, application United Kingdom, Jul. 20, 1974, 36567/74; May 21, 1975, 21821/75; Aug. 11, 1975, 36567/75

Int. Cl.[3] **C07C** *103/52*

U.S. Cl. 260—112.5 R **6 Claims**

3. The compound: L-prolyl-N-(2-benzoyl-4-nitrophenyl)-glycinamide.

4. The compound: L-lysyl-N-(2-benzoyl-4-chlorophenyl)-N-methylglycinamide.

5. The compound: L-phenylalanyl-N-(2-benzoyl-4-nitrophenyl)-glycinamide.

6. The compound: L-arginyl-N-(2-benzoyl-4-chlorophenyl)-N-methylglycinamide.

7. L-arginyl-N-(2-benzoyl-4-chlorophenyl)glycinamide.

Re. 30,474

HOT MELT SIZE AND YARN SIZED THEREWITH AND PACKAGES AND FABRICS OF SIZED YARN

Robert C. Malpass, High Point; Walter F. Illman, Greensboro, and Delano M. Conklin, Burlington, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Original No. 4,082,883, dated Apr. 4, 1978, Ser. No. 778,080, Mar. 16, 1977. Continuation of Ser. No. 286,946, Sep. 7, 1972, abandoned. Application for reissue Mar. 13, 1979, Ser. No. 20,439

Int. Cl.[3] **C08K** *5/05, 5/10, 5/13;* **C08L** *67/02*

U.S. Cl. 428—253 **24 Claims**

1. A quick-setting non-aqueous water-extractable textile melt size composition comprising an intimate admixture of a water-soluble film-forming meltable thermoplastic polymer and a melt-miscible, solid modifier *having a melting point of at least about 90° C. and* selected from the class consisting of aliphatic *polycarboxylic acids* and *partial esters thereof,* aromatic [carboxylic] *monocarboxylic* acids, [partial esters thereof,] *partial esters of aromatic polycarboxylic acids,* non-polymeric polyhydric alcohols, phenolic acids, and polyhydric phenols, wherein the proportion of polymer to modifier is about 90:10 to about 50:50 on a weight basis, said size capable of being applied as a melt to textile yarns, with quick setting when exposed to ambient conditions, and capable of being removed from the yarns by aqueous or alkali extraction.

PLANT PATENTS

GRANTED JANUARY 6, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,612
ROSE PLANT

Samuel D. McGredy, P.O. Box 14-100, Auckland, New Zealand

Filed Jun. 12, 1979, Ser. No. 47,939
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—3 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as shown and described, characterized particularly by petite pointed buds opening into pure white maintaining their color well upon aging and a loose growing, spreading plant that is very resistant to blackspot, mildew and rust.

4,613
ROSE PLANT NAMED PAUL'S PINK

Paul F. DeVor, late of Pleasanton, Calif. (by Thelma G. DeVor, executrix), assignor to DeVor Nurseries, Inc., Pleasanton, Calif.

Filed Jul. 2, 1979, Ser. No. 53,933
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant substantially as herein shown and described, characterized by its beautifully opening high centered blooms which have a very soft pink coloration and strong fragrance, its vigorous and free branching growth habit, and its profuse year-around production of long lasting flowers.

4,614
DISTINCT VARIETY OF BLACK WALNUT TREE

Walter F. Beineke, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Sep. 5, 1978, Ser. No. 939,833
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—32 **1 Claim**

1. A new and distinct variety of black walnut tree substantially as illustrated and described, which has excellent timber quality, is fast growing, has strong central stem tendency, little sweep, few crooks; late in time of leafing, pistillate flowers very late, pollen sheds late, and a nut crop is seldom produced.

4,615
APPLE TREE

Irving H. Wrigley, 2550 Wrigley Rd., Eureka, Calif. 95501

Filed May 7, 1979, Ser. No. 36,787
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—34 **1 Claim**

1. A new and distinct variety of apple tree, substantially as described in this application, and in particular, characterized by the solid red colored fruit which it bears.

4,616
PEAR TREE

Kenneth L. Turnbull, Depew, Okla., and Daniel K. Hybskmann, Shenandoah, Iowa, assignors to Henry Field Seed and Nursery Company, Shenandoah, Iowa

Filed Apr. 20, 1979, Ser. No. 31,985
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—36 **1 Claim**

1. A new and distinct variety of pear tree, substantially as shown and described herein, distinguished by the physical characteristics of the fruit including its size, shape and taste.

4,617
PEACH TREE

Aram Kevorkian, P.O. Box 409, Reedley, Calif. 93654

Filed Jul. 5, 1979, Ser. No. 55,026
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree substantially as illustrated and described, characterized by its bearing of freestone fruit having yellow flesh striated with red and by its general resemblance to the Redtop Peach Tree (unpatented), but which is distinguished therefrom by its fruit ripening from seven to ten days earlier and by having more highly colored skin.

PATENTS

GRANTED JAN. 6, 1981

ERRATA

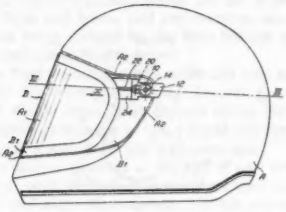
For CLASS	See PATENT NO.
119–001	4,242,763
434–263	4,242,812
411–041	4,242,939
493–295	4,242,949
440–038	4,242,979
132–037 R	4,243,061
411–174	4,243,086
493–422	4,243,215
101–195	4,243,338
040–312	4,243,340
203–010	4,243,526
260–037 SB	4,243,542
556–414	4,243,605
570–257	4,243,607
564–091	4,243,609
564–491	4,243,610
568–379	4,243,611
568–431	4,243,612
568–482	4,243,613
568–931	4,243,614
570–150	4,243,615
178–019	4,243,843
369–045	4,243,848
369–062	4,243,849
369–046	4,243,850
370–110	4,243,930

PATENTS

GRANTED JANUARY 6, 1981

GENERAL AND MECHANICAL

4,242,757
HELMET WITH TILTABLE VISOR
Pierluigi Nava, Via Dogana 1, Milan, Italy
Filed Jun. 14, 1978, Ser. No. 915,376
Claims priority, application Italy, Jan. 11, 1978, 19178 A/78
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—10 **19 Claims**



1. A helmet assembly, in particular for motorcyclists and the like, comprising:

a helmet;

a transparent visor hinged to the helmet to removably cover an opening in the helmet, with the perimetral edge of the visor being housed in an outward facing peripheral recess defining the peripheral edge of said opening in said helmet, such that said visor is flush with and not projecting from the outer surface of the helmet; and

hinging means located between the outer ends of said visor and said helmet, said hinging means including elongated guide means on said helmet extending along said helmet toward said peripheral edge of said helmet opening,

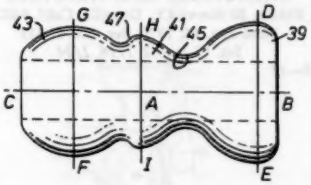
and pivot means on said outer ends of said visor engaging said elongated guide means on said helmet and being movable forwardly therealong for guiding forward displacement of said visor out of said flush position on said helmet and into a position spaced forward of and disengaged from said peripheral recess,

said elongated guide means including camming surfaces extending therealong and inclined to move the outer ends of the visor away from each other as said pivot means move forwardly therealong,

said pivot means pivotally supporting said visor on said elongated guide means for swinging of said visor about a substantially horizontal axis.

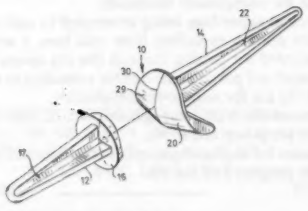
4,242,758
ELBOW PROSTHESIS
Andrew A. Amis, Leeds, England, and James H. Miller, Glasgow, Scotland, assignors to University of Leeds Industrial Service Ltd., United Kingdom
Filed May 30, 1978, Ser. No. 911,031
Claims priority, application United Kingdom, Jun. 1, 1977, 23129/77
Int. Cl.³ A61F *1/03*
U.S. Cl. 3—1.91 **19 Claims**

1. An elbow prosthesis comprising a humeral component for fitting over the end of the humerus to provide the entire bearing surface for the humerus by replacing the natural articulating surfaces of the trochlea and capitellum, the component being an elongate member of substantially C-cross section, the inner surface of which is for engagement with the end of the humerus and the outer surface of which is provided with first, second and third spherical surface portions, the first and third spherical surface portions being arranged on either side of the second spherical surface portion and the three spherical surface portions together extending over substantially the whole of the length of the component, the first and second spherical surface portions being for engagement with the ulna or a prosthetic component located thereon and the third spherical surface portion being optionally for engagement with the radius or a prosthetic component located thereon, the diameter of the



first spherical surface portion being greater than the diameter of the third spherical surface portion and the ratio of the distance from the lateral end of the humeral component to the position of maximum diameter of the humeral component in the region of the second spherical surface portion to the length of the humeral component being less than 0.5.

4,242,759
M.C.P. JOINT REPLACEMENT
Robert C. White, Beamsville, Canada, assignor to Ontario Research Foundation, Mississauga, Canada
Filed Mar. 12, 1979, Ser. No. 19,517
Int. Cl.³ A61F *1/03*
U.S. Cl. 3—1.91 **5 Claims**



1. A joint replacement comprising:

a first member having a head portion and an elongated tail portion, the latter adapted for insertion into one bone of a joint,

a second member having a head portion and an elongated tail portion, the latter adapted for insertion into another bone of the joint,

the head of said fist member defining a female contact face remote from the tail portion of the first member, said face being centrally indented to define a curved trough with the curve lying in a plane containing the tail portion of the first member,

the head of said second member defining a male contact face remote from the tail portion of the second member, said male face being centrally protuberant to define a curved ridge with the curve lying in a plane containing the tail portion of the second member,

the trough and the ridge being so shaped that, when the two members are in face-to-face contact in a first angular portion, the ridge and trough are substantially complementary with each other in the area of contact, such that lateral articulation of the tail portions in a plane normal to the planes of the ridge and trough is restrained, and when the two members are in face-to-face contact in a second

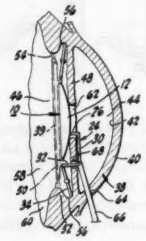
angular position the respective contacting areas of the ridge and trough are non-complementary and such that the trough allows the ridge and its tail portion to articulate laterally in said plane normal to the ridge and trough planes, the profile of the trough being substantially constant, and the profile of the ridge changing smoothly around the curve thereof from more protuberant to less protuberant.

4,242,760

INTRAOCULAR LENS STRUCTURE

Edgar A. Rainin, 20 Shawn Ct., Danville, Calif. 94526

Filed Jun. 11, 1979, Ser. No. 47,319
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **11 Claims**



1. An intraocular lens structure intended for insertion within the eye; the iris of the eye having an opening therethrough comprising:

a. lens intended for placement adjacent a side of the iris, said lens adapted for covering at least a portion of the pupil;

b. first appendage being connected to said lens and intended for extending away from said lens to the periphery of the iris for engagement therewith;

c. second appendage being connected to said lens having a first portion extending from said lens, a second portion intended for passing through the iris opening and an enlarged end portion intended for extending to the periphery of the iris for engagement therewith;

d. means for urging engagement of said first appendage to the periphery of the iris;

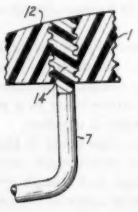
e. means for urging engagement of said second appendage to the periphery of the iris.

4,242,761

INTRAOCULAR LENS WITH THREADABLY LOCKED RETENTION LOOPS

Charles P. Chase, Brea, and Richard B. MacAnally, Altadena, both of Calif., assignors to Heyer-Schulte Corporation, Goleta, Calif.

Filed Jul. 25, 1979, Ser. No. 60,529
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **8 Claims**



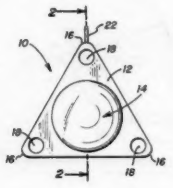
1. An intraocular lens comprising: an optical section with a pair of spaced apart threaded recesses; and a retention loop with a pair of integral spaced apart threaded shank sections that extend into the recesses and threadingly lock the retention loop to the optical section, said shank sections forming with the loop a unitary one-piece construction.

4,242,762

POSTERIOR ENCAPSULED IMPLANT LENS

Jerald L. Tennant, 806 Greentree Ct., Duncanville, Tex. 75116

Filed Jul. 25, 1979, Ser. No. 60,595
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 3—13 **15 Claims**



1. An artificial intraocular lens, comprising:

a substantially flat base element dimensioned for implantation in the posterior chamber of an eye adjacent to the iris;

said base element having coplanar posterior and anterior surfaces and a multi-sided periphery with rounded corners;

an optic element mounted substantially centrally in said base element; and

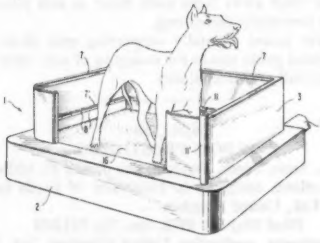
pin means extending outwardly from the periphery of at least one corner of said base element for clipping the lens to the iris.

4,242,763

PET TOILET

John A. Walker, 663 Lefferts Ave., Brooklyn, N.Y. 11302

Filed Dec. 19, 1978, Ser. No. 971,052
Int. Cl.³ A47K *17/00*
U.S. Cl. 119—1 **4 Claims**



1. A lavatory unit for a pet comprising:

a housing having a hollow base with a bottom slanted toward one end thereof;

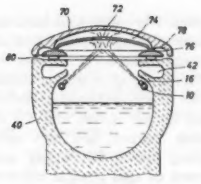
an upstanding enclosure wall mounted along the bottom thereof to said base and defining an interior lavatory area;

liquid inlet piping connectable to a source of liquid for providing a source of flushing liquid and mounted on said housing, said inlet piping having orifices thereon for directing flushing liquid against the interior side of said enclosure wall;

an elongate platform mounted to said base and forming the top thereof, said platform being spaced at two opposing ends from said base;

sets of spaced gear wheels respectively located at corresponding ones of said opposed platform ends;
an endless belt mounted around and supported by said platform and at least one of said gear wheels and driven by said gear wheels;
an end member having a circular cross-section located at said one end of said base and around which said belt extends;
a trough mounted within said base transversely to said belt and having an arcuate cross-section, the top of said trough being closely spaced from said end member;
a depending member for defining a liquid seal mounted to said base and spaced on one side thereof from said trough;
a drain and trap area located at said one end of said base and spaced from and below said end member, said drain and trap area being defined by the base bottom and by said trough and depending member;
a drain in fluid communication with said trap area and located on the other side of said depending member, the bottom of said drain being located above the bottom of said depending member so that a liquid seal can be formed at the end of said drain and trap area; and
a scrapper means mounted at the top of said trough in engagement with said belt at said end member for removing most of said waste deposited on said belt and for directing said waste onto said trough and into said drain and trap area.

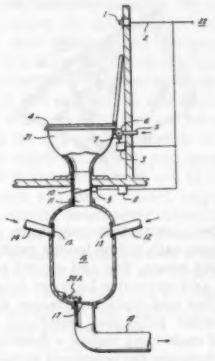
4,242,764
HYGIENIC CLEANING APPARATUS
Mamoru Fukuda, 1260 Hardy Dr., Bridge City, Tex. 77611
Filed Sep. 20, 1978, Ser. No. 944,067
Int. Cl.[3] A47K *13/24*; A61H *35/00*; E03D *9/08*
U.S. Cl. 4—420.4 **22 Claims**



1. In combination with a toilet having an overhanging lip affixed to a water holding bowl, hygienic cleaning apparatus for washing the genital area of a person sitting thereover, comprising
a tube having an inlet for receiving water under pressure, said tube being adapted to be located in the bowl extending along the lip thereof with said tube being located beneath and at least partly circumscribing the genital area; and
a plurality of nozzles connected to said tube and spaced apart from each other, said nozzles being directed upwardly and angularly inwardly so that water streams emanating under pressure from said nozzles converge at a point below the genital area to form a further upward combined stream that contacts the genital area.

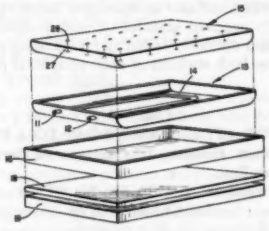
4,242,765
WATER SAVING COMMODE
Joyce A. Russell, 858 W. 41st St., Houston, Tex. 77018
Filed Aug. 17, 1979, Ser. No. 67,458
Int. Cl.[3] E03D *1/00*
U.S. Cl. 4—321 **7 Claims**

1. A waste removal system comprising:
a receptacle capable of receiving waste;
control means for controlling said waste's removal from said receptacle,
fluid delivery means responsive to said control means for introducing sufficient flush fluid into said receptacle to to flush waste from said receptacle;
valve means in fluid communication with said receptacle and responsive to said control means for controlling the exit of said waste and said flush from said receptacle;
a holding tank in fluid communication with said valve means and having an outlet leading to a sewer line;



at least one source of waste fluid other than said receptacle, said source being in fluid communication with said holding tank; and
bias valve means positioned for opening said holding tank outlet in response to the accumulation of a predetermined quantity of said waste, flush fluid and waste fluid, for controlling the flow of said accumulated wastes and fluids from said holding tank to the sewer line.

4,242,766
HEAT TRANSFER BED ASSEMBLIES
Joseph Allegro, 731 NE. 69th St., Boca Raton, Fla. 33431
Filed Jun. 11, 1979, Ser. No. 47,355
Int. Cl.[3] A47C *27/08*, *21/08*
U.S. Cl. 5—422 **8 Claims**



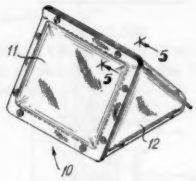
1. A heat transfer bed assembly comprising in combination a lowermost thermal insulating panel, an uppermost mattress panel and an intermediate heat transfer panel sandwiched between the insulating panel and the heat transfer panel containing inlet and outlet fittings connected to an internal passageway for circulation of fluid through the heat transfer panel, and a fluid confining thermally conductive liner about the upper side of the heat transfer panel in thermal contact with the mattress panel.

4,242,767

PLAY PILLOWS

Susan L. McMullen, and David W. McMullen, both of 309 W. 82nd St., New York, N.Y. 10024

Filed Aug. 30, 1978, Ser. No. 938,152
Int. Cl.[3] A47C 7/02; A63H 33/08
U.S. Cl. 5—465 **11 Claims**



1. A play pillow construction comprising, in combination, a plurality of pillows, each pillow having multi-sided polygonal shaped cushioning means, first and second polygonal shaped layers of fabric, said respective layers of fabric being secured together to enclose said cushioning means therebetween and define a multi-sided polygonal peripheral portion entirely surrounding said cushioning means, a flexible shape retention means enclosed between the peripheral portions of said layers for stiffening the periphery of said pillow and a fastening means positioned on each peripheral portion side for enabling said pillow to be joined to another pillow of like configuration, said flexible shape retention means and said fastening means being cooperatively disposed on each peripheral portion side to thereby provide increased structural integrity to said peripheral portions, said plurality of pillows being joined to one another with their joined sides maintained in adjacent and parallel relationship to define a polyhedral configuration that has structural integrity provided by said flexible shape retention means utilized to stiffen the periphery of each of the pillows.

2. A play pillow comprising, in combination, a multi-sided polygonal shaped cushioning means, first and second polygonal shaped layers of fabric, said respective layers of fabric being secured together to enclose said cushioning means therebetween and define a multisided polygonal peripheral portion entirely surrounding said cushioning means, a flexible shape retention means enclosed between the peripheral portions of said layers for stiffening the periphery of said pillow, and a fastening means positioned on each peripheral portion side for enabling said pillow to be joined to another pillow of like configuration, wherein said fastening means positioned on each peripheral portion includes an operative fastening means disposed on both opposed surfaces of each peripheral portion side, each of said operative fastening means being disposed in a like position on both surfaces of each peripheral portion side.

4,242,768

MEANS FOR ATTACHING A BOAT TO A TRAILER

Walter P. Winsett, Houston, Tex., assignor to Darrell T. Mosley, Houston, Tex.

Filed Jul. 2, 1979, Ser. No. 54,166
Int. Cl.[3] B63P 3/10
U.S. Cl. 9—1.2 **2 Claims**

2. A boat and trailer combination comprising:

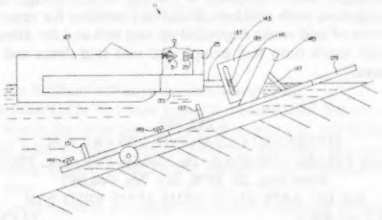
(a) a generally upstanding member fixedly attached to substantially the forward end of said trailer, said upstanding member having a generally upwardly directed elongated slot therein;

(b) a substantially U-shaped float member for substantially encircling the front and sides of said boat when said boat is positioned above said trailer;

(c) means for pivotally attaching said float member to said upstanding member to allow said float member to pivot relative to said trailer and to move up and down within said slot in said upstanding member to aid in guiding said boat from and onto said trailer;

(d) female means fixedly attached to the forward end of said float member, said female means including a body member having a rearwardly directed substantially conical cavity for defining a cam means and having a plurality of apertures in the side of said conical cavity for defining a lock means; and

(e) male means attached to the forward end of said boat, said male means including a body member and a lock means for coacting with said lock means of said female means to automatically lock said male and female means together when said lock means of said male and female means engage one another thereby locking said boat to said trailer, said lock means of said male means including a latch member for extending outward of the exterior surface of said body member of said male means and into each of said apertures of said body member of said female means when said male means is received in said female means, said body member of said male means including a cam follower means for coacting with said cam means of



said female means to guide said lock means of said male means into lockable engagement with said lock means of said female means, said body member of said male means including a forwardly directed substantially conical exterior surface for being selectively received in said conical cavity of said female means and for defining said cam follower means thereof, said lock means of said male means including means for urging said latch members thereof outward of said conical exterior surface of said body member of said male means and including means for selectively pulling said latch members thereof inward of said apertures in the side of said conical cavity of said body member of said female means to selectively unlock said male means from said female means, said male means including a spring member having a first end fixedly attached to said body member of said male means and having a second end fixedly attached to the forward end of said boat for movably attaching said body member of said male to said boat, said float member causing said female means to align with said male means when said boat is positioned within said float member.

4,242,769

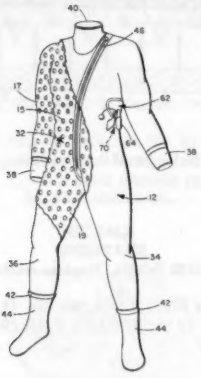
ANTI-EXPOSURE INFLATABLE STRUCTURE

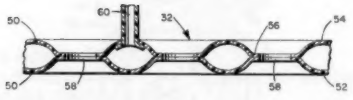
John F. Rayfield, Dover, Del., and John D. Schieble, Chestertown, Md., assignors to ILC Dover, a division of ILC Industries, Inc., Frederica, Del.

Filed Dec. 14, 1978, Ser. No. 969,380
Int. Cl.[3] B63C 9/08; A41D 13/02
U.S. Cl. 9—330 **17 Claims**

1. An inflatable body protective spacer assembly for reducing loss of heat from the body of a wearer when subjected to a hostile cold environment comprising: a spacer formed from an inflatable bladder means having inner and outer surfaces formed to fit a portion of the body and sealed at their contiguous edges, said bladder means having a plurality of sealed areas that form a plurality of intercommunicating inflatable cavities

between said unsealed areas; at least one water-vapor-passing opening positioned in each of said sealed areas; a breathable fabric resistant to the passage of water therethrough loosely overlaying said outer surface of said bladder means with its edges sealed to the outer surface of the bladder means and covering said water-vapor-passing openings to prevent water outside the spacer assembly from entering between the body of





the wearer and said bladder means but allowing body moisture that passes through said water-vapor-passing opening to pass through said breathable fabric; an inflation gas supply means operatively connected to said inflatable bladder means; and means for releasing gas from said supply means to inflate said bladder means when protection from loss of heat from the body of the wearer is demanded.

4,242,770

DEVICE FOR INFEEDING A STRIP OF FLEXIBLE MATERIAL FOR USE IN MACHINES FOR BINDING THIN ARTICLES AND, IN PARTICULAR, MACHINES FOR EDGING PARTS FOR BOOTS AND SHOES

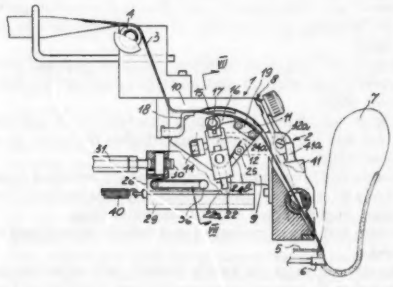
Alberto Bocca, and Mario Pagani, both of Vigevano, Italy, assignors to Sagitta Officina Meccanica S.p.A., Italy

Filed Mar. 30, 1978, Ser. No. 891,758

Claims priority, application Italy, Apr. 1, 1977, 22034 A/77

Int. Cl.[3] **A43D** *43/06, 11/00;* **B65H** *17/36;* **B32B** *3/04*

U.S. Cl. 12—24.5 **3 Claims**



1. An infeed device for infeeding a strip of flexible material, said infeed device capable of being used in a machine for binding thin articles and, in particular, a machine for edging parts for boots and shoes, said machine comprising, means for placing adhesive between said strip and the articles to be edged, cutting mechanism actuated by control means provided wih a reciprocating motion, for cutting said strip, mechanism for folding the strip partly above and partly below the outline of the said articles, and pressure-applying and transportation mechanism for intermittently pressing the strip against the articles and for causing the articles to be moved forward as they are edged, said infeed device comprising a quadrant mounted ahead of said cutting mechanism oscillatable around an axis perpendicular to the direction in which said strip moves forward, a gripper unit mounted on said quadrant to take firm hold of the strip and to move it forward towards said cutting mechanism while the said quadrant travels forward, and operating means with which to cause the said quadrant to undergo a pendulum motion and said gripper unit to close and to open during the forward and return travel, respectively, of said quadrant, said operating means being connected to the cutting mechanism control unit so as to bring about the forward movement of the said strip, immediately after it has been cut, until the said strip, immediately after it has been cut, until the free end thereof has been carried to a point corresponding to where said folding mechanism and said pressure-applying and transportation mechanism are positioned.

4,242,771

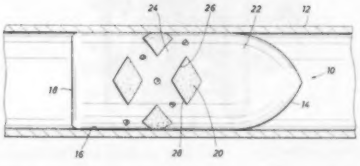
PIPELINE PIG

Kenneth M. Knapp, 1209 Hardy St., Houston, Tex. 77020

Filed Jul. 16, 1979, Ser. No. 58,064

Int. Cl.[3] **B08B** *9/04*

U.S. Cl. 15—104.06 R **11 Claims**



1. A pipeline pig comprising:

(a) a pig body having

(1) an outer surface adapted to be partly contacted against the wall of a pipe to be cleaned;

(2) a transversely extending end portion adapted to respond to a pressure gradient acting thereon to push said pig body along the pipeline;

(3) a central portion formed of a resilient material; and

(b) a stud having

(1) an elongate shank;

(2) a tip on said shank converging to a point and adapted to be positioned protruding from said body to engage pipe wall located deposits; and

(3) shoulder means on said shank for embedding in said central portion to position said shank extending radially outwardly therefrom through said outer surface to position said tip protruding from said body, said shoulder means cooperating with said central portion permitting flexure of said shank upon deflection of said tip.

4,242,772

TRAVERSE ROD DRAPERY HOOK

Marcel T. Rahal, 11251 Promenade, Detroit, Mich. 48213

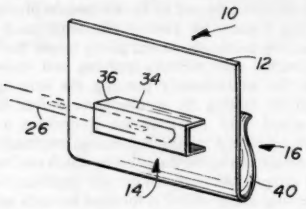
Filed Oct. 16, 1978, Ser. No. 951,372

Int. Cl.[2] **E05D** *13/02*

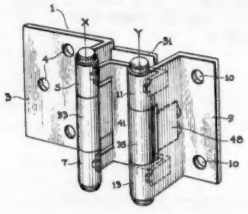
U.S. Cl. 16—93 D **12 Claims**

1. A drapery hook for suspending a drapery from a traverse rod having a travelling bracket thereon, comprising:

a. a support plate, forming part of said hook
b. means on said plate telescopingly receiving the travelling bracket of the traverse rod, said receiving means configured to prevent rotation of the hook about the bracket of the traverse rod, and
c. means for detachably interconnecting the hook to a drapery.



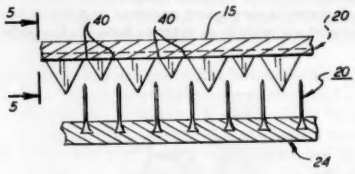
4,242,773
CABINET HINGE
Lauris L. Beigh, 9801 - 47th Ave. SW., Seattle, Wash. 98136
Filed Aug. 17, 1978, Ser. No. 934,429
Int. Cl.[2] E05D *3/06*
U.S. Cl. 16—164 **2 Claims**



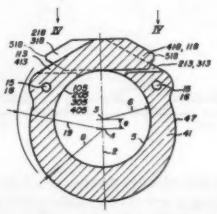
1. A hinge comprising:
a first plate member including a first pivot journal defining cam means;
a second plate member including a second pivot journal defining cam means;
a movable pivot sequencing member operatively connected to the cam means on the first and second plate members;
a third plate member operatively connected to the first and second plate members in substantially surrounding relation to the sequencing member;
and means for locking the sequencing member and either the first plate member or the second plate member together while the unlocked member pivots.

4,242,774
MEAT TENDERER
Margaret F. Massaro, 229 Wainwright Ave., Syracuse, N.Y. 13208
Filed Jul. 13, 1979, Ser. No. 57,445
Int. Cl.[3] A22C *9/00*
U.S. Cl. 17—28 **13 Claims**

1. A meat tenderer that includes
a generally flat support plate,
a handle secured to the top surface of the plate,
a plurality of thin blades mounted in rows along the bottom surface of the plate, and
each of said blades further including a series of teeth aligned along its length that depend downwardly from the plate, each of said teeth terminating in a point, and every other tooth along the length of the blade being of shorter length than that of an adjacent tooth.



4,242,775
SNAPRING
Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan
Filed Feb. 12, 1979, Ser. No. 11,242
Int. Cl.[3] B65D *63/00*; **F16B** *19/00*
U.S. Cl. 24—16 R **7 Claims**



6. A snapring consisting of four substantially equal plane rings, wherein each ring has an inner face and an outer face with an eccentricity between said faces for forming a radially wider portion on the respective ring and a radially narrower portion on the respective ring, wherein said radially wider portion bears the main force of the radial capability to spann said ring in radial direction,
wherein a slot is provided cutting said radially narrower portion for making a radial flexibility of said ring possible,
wherein an imaginary face can be assumed through the middle of said wider and narrower portions, whereby said ring forms portions of symmetry around said imaginary face;
wherein said slot extends normal or under an angle relatively to said imaginary face,
wherein an extension of one arm of said ring extends along said slot to form the other wall of said slot,
wherein the other arm of said ring ends on said slot,
wherein said ring includes at least one connection portion for fastening of a plurality of rings axially behind each other,
wherein said four rings consist of two inner rings and of two outer rings, wherein said inner rings are axially behind each other,
wherein one of said outer rings attaches one of said inner rings and the other outer ring attaches the other of said inner rings,
wherein said inner rings are oppositionally mounted respectively to said outer rings whereby said extensions of said inner rings face said slots of said outer rings,
wherein said arm extensions extend radially beyond said slot; and
wherein said rings are axially behind each other are kept together by connection means to form together said snap ring, whereby the inner rings are closing the slot areas of said outer rings and said outer rings are closing the slot

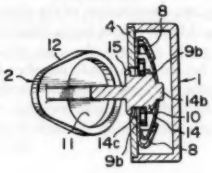
areas of said inner rings for forming a radially allround inner face-set on said snap-ring while said snap ring may be radially expanded by pressing said extensions together by a respective jig for moving said snap ring over a cylindrical part to be fastened whereafter when said extensions are released from said pair of forceps, the said snap ring clamps radially inwardly to keep said part kept allround spanned by said inner faces of said rings under the radially inwardly directed spanning forces of said snap ring.

4,242,776

CUFFLINK

Hideo Kurashima, Zip 110, 5-6, Negishi 2-chome, Taito-ku, Tokyo, Japan

Filed Aug. 13, 1979, Ser. No. 66,466
Claims priority, application Japan, Apr. 13, 1979, 54-49013[U]
Int. Cl.³ A44B 5/00
U.S. Cl. 24—41 **12 Claims**



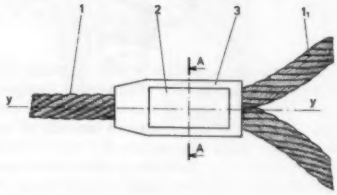
1. A cufflink, comprising:
two enlarged elements, the first being free and the second having an attached shank;
the shank having an enlarged free end portion and an axially adjacent portion of non-circular transverse cross-sectional figure;
the shank further having laterally outwardly opening notch means associated with said non-circular portion;
said first enlarged element being hollow and having a back through which an opening communicates with the interior thereof;
said opening having a portion of non-circular transverse cross-sectional figure sized to permit receipt of said non-circular portion of said shank therethrough in each of two different angular orientations;
said first enlarged element housing a first spring and a second spring;
the first spring being adapted, positioned and mounted to be intercepted by and resiliently loaded by engagement with said enlarged free end portion of said shank is inserted through said opening with said shank non-circular portion being in a first said angular orientation relative to said opening non-circular portion and said shank free end pushed further into the interior of said first enlarged element;
the second spring being adapted, positioned, and mounted to snap into said notch means and to remain therein as further pushing is relaxed, whereupon said first spring, recovering slightly causes said shank non-circular portion to become closely surrounded for at least part of the axial extent thereof by said opening non-circular portion, so that engagement of the second spring in the notch prevents withdrawal of the shank from the opening and close surrounding of the shank non-circular portion by the opening non-circular portion prevents substantial angular rotation of said first enlarged element relative to said second enlarged element, but so that upon further pushing of said shank into said opening, said shank non-circular portion fully axially passes said opening non-circular portion, whereupon said first enlarged element may be angularly rotated relative to said second enlarged element to sequentially cam said second spring out of said notch and bring said shank non-circular portion into said second angular orientation relative to said opening non-circular portion so that said first spring, upon relaxation of said further pushing, may substantially eject said shank from said opening permitting separation of said first enlarged element from said second enlarged element.

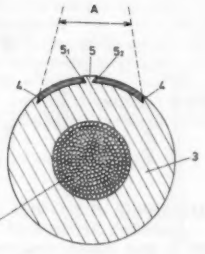
4,242,777

MARKED CABLE SLING

Daniel P. J. Bourard, Thibermont by Neuville les Dieppe, and Michel J. Garconnet, 22, rue du Docteur Vitet, Saint Nicolas d'Aliermont, both of France

Filed Jul. 12, 1978, Ser. No. 923,782
Claims priority, application France, Jul. 13, 1977, 77 21798
Int. Cl.³ F16G 11/00
U.S. Cl. 24—115 A **3 Claims**





1. A sling comprising a cable having an end portion doubled back upon itself to form an end loop, a malleable metal sleeve encircling and tightly engaging the end of the cable and the portion of the cable beside said end, and a transversely curved metal plate embedded in the outer surface of said sleeve and having an exposed outer surface and side edges extending lengthwise of the axis of the sleeve, metal of said sleeve overlying said side edges to hold the plate in place as long as the sleeve is not deformed, said outer surface of the plate being provided with identifying intaglio marking.

4,242,778

PRESS FIT INTELLIGENT FASTENERS FOR RANDOM OR LIGHTLY CONSTRAINED ASSEMBLY

Alan F. Kay, 67 Byron Rd., Weston, Mass. 02193

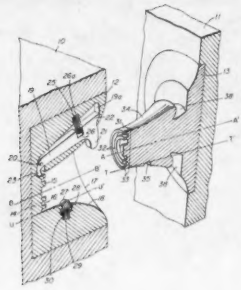
Filed Jul. 26, 1978, Ser. No. 928,297
Int. Cl.³ A44B 19/00
U.S. Cl. 24—230 R **18 Claims**

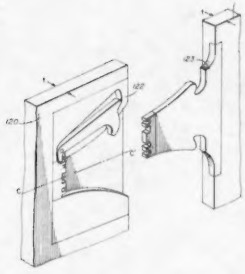
1. Fastening means, comprising:
a first mating element for receiving a second mating element in mating relation along an insertion axis, said first element having
circular key code means formed in said first element in a plane perpendicular to said axis and rotationally symmetric about said axis,
receiving surface means formed in said first element rotationally symmetric about said axis, said receiving surface providing a monotonically decreasing aperture directed toward said code means for receiving said second element,
extensible locking means formed in said receiving surface means for locking said second mating element in place

relative to said insertion axis only when said elements are in mating relation as determined by said code means;

a second mating element for insertion in said first mating element in mating relation along said insertion axis in the direction of said code means, said second element having

second circular key code means formed in said second element in a plane normal to said axis and rotationally





symmetric about said axis in mating relation to the first said code means,

inserting surface means formed in said element rotationally symmetric about said axis, said inserting surface providing a monotonically decreasing projection directed toward said second code means for inserting into said first element, and

engaging means formed in said inserting surface means for engaging said locking means in locking relation only when said elements are in mating relation as determined by said code means, whereby said second element may be introduced into said first element along an arbitrary axis and easily aligned with said insertion axis in mating relation and locked in place only as determined by said code means.

4,242,779

APPARATUS FOR THE MANUFACTURE OF NON-WOVEN TEXTILE FABRICS

Jean Curinier, Le Cheylard, and Charles Vandermarliere, Pont-de-Cherruy, both of France, assignors to Les Fils d'Auguste Chomarat & Cie, Paris, France

Filed Apr. 21, 1978, Ser. No. 898,577

Claims priority, application France, Apr. 24, 1977, 77 13991; Jul. 13, 1977, 77 22475

Int. Cl.³ D04H *3/04*

U.S. Cl. 28—101 **3 Claims**

1. In an apparatus for the manufacture of a web of weft yarns which run transversely relative to the length of the web and which can be incorporated into a composite non-woven fabric, where said apparatus comprises, in combination:

(a) a pair of laterally spaced helical yarn guide members rotatable about their own axes,

(b) at least four yarn feed elements rotatable together about an axis which is parallel to and between the axes of the helical yarn guide members,

(c) at least four bobbin supports,

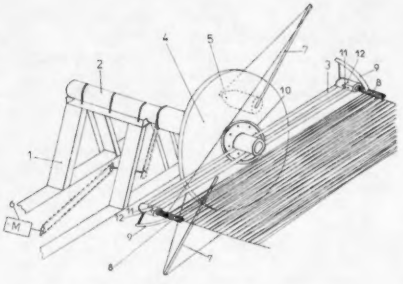
(d) means for feeding a yarn from a bobbin carried by each of said supports, whereby each yarn may be wrapped around said helical yarn guide members, and

(e) a yarn guide yarn ramp placed adjacent each said helical yarn guide member, said yarn guide ramps being disposed to guide yarn into the space between adjacent turns of the respective helical yarn guide members,

the IMPROVEMENT comprising:

(f) the laterally spaced helical yarn guide members being substantially identical hollow rotary members, each helical yarn guide member comprising a plurality of individual helices imbricated with one another, wherein the number of helices is equal to the number of weft yarns being fed, and the individual helices are rotated at a speed which is double that of the speed of rotation of the yarn feed elements, and

(g) each yarn guide ramp including two fixed guides, one upstream and one downstream of the direction of advance of the web, said fixed guides being disposed adjacent each helical yarn guide member, the ends of said fixed guides adjacent the helical yarn guide member being tangential thereto and at a distance from one another equal to the pitch of the helical yarn guide member minus the thickness of the material forming the helical yarn guide member itself, said fixed guides being inclined in opposite directions, the upstream guide being inclined away from the direction of advance of the web and the downstream fixed guide being inclined toward the direction of advance of the web,



(h) a first half of the yarn feed elements, said first half including feed elements adjacent one to the other and having their outlet ends positioned upstream of the upstream fixed guides, and a second half of the yarn feed elements, said second half including feed elements adjacent one to the other and having their outlet ends positioned downstream of the downstream fixed guides, so that the yarns from the first half of the yarn feed elements are laid down in a common vertical plane and guided into spaces between turns of the helices by the upstream fixed guide and the yarns from the second half of the yarn feed elements are laid down in a common vertical plane and guided into spaces between turns of the helices by the downstream fixed guide, whereby the weft yarns are strictly parallel to one another and identical selvedges are formed.

4,242,780

HAMMER WITH CHIPPING BLADE

Erwin J. Littman, 4466 N - 600 W, LaPorte, Ind. 46350

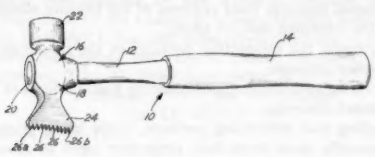
Filed Nov. 13, 1979, Ser. No. 93,056

Int. Cl.³ B23C *43/00*

U.S. Cl. 29—81 D **7 Claims**

1. A chipping hammer for cleaning welds and the like comprising an elongated handle, a head fixed to an end of the

handle, said head having a hammer head portion on one end and a chipping blade projecting from the other end, said chipping blade having a plurality of teeth formed on the end thereof, said teeth being formed with surfaces transverse and



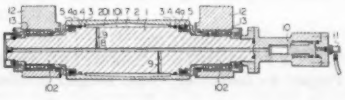
square to the plane of the head and converging toward the tip of the tooth to form a blunt tip, the edges of each tooth being sharp, the axis of said handle lying in the plane of said chipping blade for facilitating use of the chipping hammer in scraping chipping and cleaning welds.

4,242,781

VARIABLE CROWN SLEEVE ROLL

Toshiji Takigawa, Nishinomiya, and Junichi Kida, Kohriyama, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Apr. 4, 1978, Ser. No. 893,305
Claims priority, application Japan, Mar. 2, 1978, 53-23938
Int. Cl.[2] B21B *31/32;* B60B *9/22*
U.S. Cl. 29—113 AD **1 Claim**



1. A variable crown sleeve roll for rolling steel strip comprising an arbor, a sleeve having the opposite ends of the inner peripheral surface shrink fitted to the outer peripheral surface of said arbor for being sealingly secured thereto and the portion of said sleeve between said opposite ends defining with said arbor a chamber of a predetermined shape, said arbor having fluid passage means therein for supplying a pressurized fluid to said chamber to thereby control the amount of crown of said sleeve, the thickness of said sleeve being tapered along straight lines and decreasing from the opposite ends to the center, the optimum minimum thickness t min of the sleeve at the central axial portion thereof, the optimum pressure receiving length l of the sleeve, the optimum contact pressure p^1 between the sleeve and the arbor, and the sleeve thickness taper angle α being in accordance with the optimum formulas:

$$0.3\sqrt{R\frac{q}{P}} \leqq t \min \leqq \sqrt{R\frac{q}{P}}$$

$$B-(D/4) \leqq l \leqq L-(D/2)$$

$$1° \leqq \alpha \leqq 5°$$

$$p^1 > p$$

wherein:

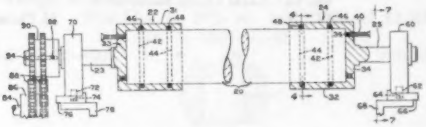
R is the average radius of the sleeve at the axially central position thereof
D is the outer diameter of the sleeve
L is the overall length of the sleeve
B is length of the roll to contact the width of the steel strip to be rolled
q is the unit length rolling load; and
P is the pressure of the fluid.

4,242,782

CERAMIC CONVEYOR ROLLS WITH METAL END CAPS FRICTIONALLY FIXED THERETO

Henry P. Hanneken, Pittsburgh, and William H. Marriott, Jr., Altoona, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 8, 1979, Ser. No. 46,984
Int. Cl.[3] B21B *31/08;* F27D *3/00*
U.S. Cl. 29—129 **8 Claims**



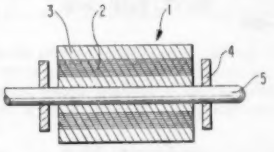
1. A glass conveyor roll of ceramic composition having an axially elongated, substantially cylindrical shape including an intermediate portion of round cross-section for conveying glass sheets for thermal treatment, shafts located in alignment with the ends of said roll, and means for drivingly connecting at least one of said shafts to said roll, said means comprising a metal end cap including a metal cylindrical member rotatable with one of said shafts and having an inner surface in circumferential engagement with said roll at an end portion thereof, a circumferential groove in said inner surface of said metal cylindrical member and an O-ring of elastomeric material received within said groove in position to provide a frictional force sufficient to transmit a torque from said one of said shafts through said metal cylindrical member to said ceramic roll without undue wear of said roll, O-ring or said metal cylindrical member.

4,242,783

CALENDER ROLL FOR USE IN SUPER CALENDER FOR MAGNETIC TAPES

Kenji Watanabe, and Goro Akashi, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 11, 1978, Ser. No. 923,751
Claims priority, application Japan, Jul. 11, 1977, 52-82054
Int. Cl.[3] B21B *27/02, 31/08*
U.S. Cl. 29—132 **8 Claims**



1. In a super-calender roll for super-calendering the magnetic surface of a magnetic recording medium and having a core and a roll portion secured to said core, the improvement wherein:

said roll portion comprises an inner roll portion of fibrous material on which is molded an outer roll portion of polyamide resin, the outer surface of said outer roll portion having a super smooth surface and being free of said fibrous material;

said inner roll portion comprising a plurality of layers of said fibrous material wound on said core, the thickness of said plurality of layers being 20 to 30 mm;

said outer roll portion has a thickness of about 10 to 15 mm, and said polyamide resin has a linear expansion co-efficient from about 8×10^{-5}/°C. to about 8×10^{-4}/°C.;

said fibrous material is made of glass fibers; and

the hardness of said outer surface is at least 80 degrees Shore.

4,242,784

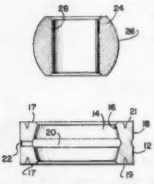
METHOD OF MANUFACTURING A SPHERICAL BEARING

Albert R. McCloskey, Fairfield, Conn., assignor to The Heim Universal Corporation, Fairfield, Conn.

Continuation of Ser. No. 703,820, Jul. 9, 1976, abandoned. This application Jul. 25, 1978, Ser. No. 928,040

Int. Cl.³ B21D *53/10*; B21K *1/04*

U.S. Cl. 29—149.5 B **13 Claims**



1. A method of manufacturing a spherical bearing comprising preforming an annular metallic outer bearing member with an axial opening therethrough and a concave spheroidal inner bearing surface, preforming an inner bearing member and with a convex outer spheroidal bearing surface complementary to and in precise spheroidal bearing conformity with said preformed concave inner bearing surface of said outer member to substantially final dimensions of the members and bearing surfaces, axially aligning the inner and outer bearing members, forcing the inner member axially within the opening of the outer member, the inner member acting as a die, and uniformly radially expanding and enlarging one end of the outer member, thereby cold working an annular portion of the metallic outer member which surrounds the opening, by stretching the annular portion beyond its elastic limit.

4,242,785

METHOD FOR GAPPING A SLIDE FASTENER CHAIN

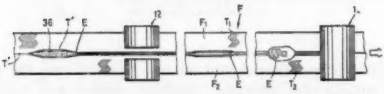
Hideo Shimai, Namerikawa, Japan, assignor to Yoshida Kogyo KK, Chiyoda, Japan

Division of Ser. No. 930,972, Aug. 4, 1978, Pat. No. 4,188,716. This application Nov. 13, 1979, Ser. No. 93,278

Claims priority, application Japan, Aug. 10, 1977, 52-95696

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—408 **1 Claim**



1. A method of producing a series of gaps free of fastener elements in and along a continuous length of slide fastener chain having a pair of oppositely disposed stringer tapes carrying along confronting longitudinal edges rows of fastener elements in interengaged relation, each of said elements having a coupling head portion and a connecting portion, which method comprises the steps of:

(a) applying a preliminary spreading force to the fastener chain to impart a tendency to the fastener chain to spread the confronting edges of the tapes apart;

(b) applying constant tension to a length of said fastener chain;

(c) spreading apart the confronting edges of the tapes which have been imparted said tendency, and holding the interengaged coupling head portions of the fastener elements of the tensioned fastener chain;

(d) gripping the connecting portions of the interengaged fastener elements;

(e) severing said interengaged coupling head portions of the fastener elements;

(f) pulling said connecting portions, while being gripped, outwardly apart from their respective tapes to remove residual element debris; and

(g) withdrawing the fastener chain intermittently along a length comprising to the spacing between adjacent gaps to be produced.

4,242,786

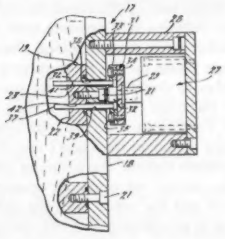
METHOD OF FORMING AN ASSEMBLED ARTICLE

P. Paul Pappalardo, Greenwich, Conn., assignor to Greenstate, Inc.

Filed Dec. 1, 1978, Ser. No. 965,486

Int. Cl.³ B29C *17/07, 17/08, 27/00*

U.S. Cl. 29—416 **4 Claims**



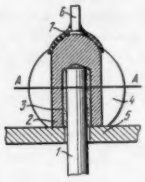
1. The method of making an article to be assembled from two pieces having overlapping apertured parts comprising the steps of forming a mold with a surface to generate the shape of the pieces, the mold surface being configured to form the pieces simultaneously and initially being integrally connected together, the mold surface being configured to form the portions of the parts to be aperture aligned in one direction relative to each other and offset relative to each other in non-overlapping relationship in a normal direction, placing a preform in the mold, blow molding the preform into engagement with the mold surface to form a single element, simultaneously piercing apertures in the respective parts of said preform while still held in engagement under pressure with the mold surfaces, removing the element from the mold, severing the element along the abutting edges of the parts and between the pierced apertures of the respective parts to form the separate parts for subsequent assembly, aligning the pierced apertures so that they are superimposed and placing a fastener through the aligned apertures for affixing the pieces together.

4,242,787

METHOD FOR JOINING FIBERGLASS PLASTIC ROD TO METAL FITTING OF ELECTRICAL DEVICE

Andrei A. Deribas, ulitsa Pravdy, 1, kv. 20; Alexei I. Limasov, ulitsa 1905 goda, 85, kv. 110; Alexei I. Matytsin, Morskoi prospekt, 5, kv. 32; Anatoly M. Staver, Morskoi prospekt, 36, kv. 10; Rudolf I. Shebalin, ulitsa Serebrenikovskaya, 16, kv. 4, all of Novosibirsk, and Jury N. Yashin, Slavyansk, Parkovy pereulok, 7, kv. 52, Donetskaya oblast, all of U.S.S.R.

Filed Aug. 7, 1978, Ser. No. 931,424
Int. Cl.³ B23P *17/00*
U.S. Cl. 29—421 E 5 Claims



1. A method for joining a fiberglass plastic rod to a metal fitting of an electrical device, comprising the steps of

providing a bore in said metal fitting, the diameter of said bore somewhat greater than that of said fiberglass plastic rod;

inserting one of the ends of said fiberglass plastic rod into said bore;

filling the gap defined between said fiberglass plastic rod and said bore provided in said metal fitting with a porous material to form a porous layer; and

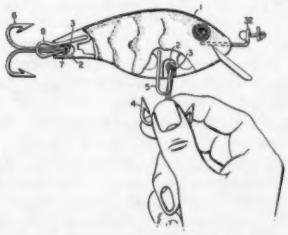
compressing said metal fitting by pulse loading, by providing an explosive charge around said fitting in the region of said bore and shaping the explosive charge to have a maximum thickness at a cross-section which intersects said bore, and thereafter igniting said explosive charge to apply a maximum pressure to said rod at said cross-section to compressively join said fiberglass plastic rod and said metal fitting.

4,242,788

METHOD OF DISASSEMBLING HOOKS FROM HOOK RETAINERS IN RECESSED CUPS OF FISHING LURES

Welbourne D. McGahee, Melbourne, Fla., assignor to Loop-A-Line, Inc., Melbourne, Fla.

Division of Ser. No. 905,738, May 16, 1978. This application Jul. 23, 1979, Ser. No. 59,630
Int. Cl.³ B23P *19/00*
U.S. Cl. 29—426.6 1 Claim



1. A method of disassembling a fishing lure having hooks and biased hook retainers with free ends located in recessed cups, comprising:

pressing the eye of each hook into said associated cup until the eye is adjacent to the free end of said retainer;

rotating each hook eye 90 degrees to disengage the eye from said retainer; and

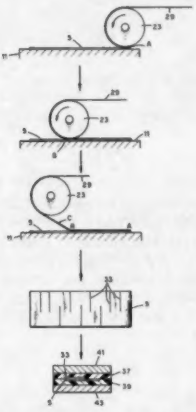
withdrawing the hook eye from said associated cup.

4,242,789

METHOD FOR MAKING AN IMPROVED MAGNETIC ENCODING DEVICE

Richard J. Fox, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 16, 1979, Ser. No. 21,291
Int. Cl.³ B23D *11/02*
U.S. Cl. 29—446 8 Claims



1. A method of making an improved magnetic encoding device having at least one element of magnetic material for use as a magnetic storage medium, comprising the steps of:

bending said element uniformly along the length thereof by passing said element about a roller having a radius sufficient to bend said element along a common radius of curvature sufficient to exceed the yield point of said element;

attaching the free end of said element passing about said roller to a non-magnetic substrate;

advancing said roller over said substrate to extend said element in an unbent orientation a desired length thereover; and

restraining the prebent element in an unbent orientation on said substrate by attaching said element to said substrate at said desired length position so that a uniform stress is produced in said element along said desired length thereof.

4,242,790

METHOD OF MAKING AN ELECTRICAL CONNECTOR CONTACT

Dennis L. Ellingson, Sidney; Paul D. Niles, Bainbridge; Richard W. Normann, Otego, and Theodore L. Wilklow, Sidney, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 863,366, Dec. 22, 1977. This application Sep. 28, 1978, Ser. No. 946,690
Int. Cl.³ H01R *43/02*
U.S. Cl. 29—879 9 Claims

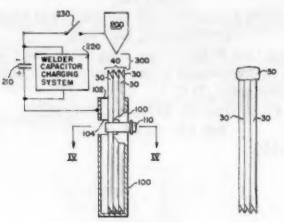
1. A method of assembling an electrical contact for an electrical connector, said contact including a plurality of wires held within a sleeve, the steps of the method comprising:

cutting a fine wire into a plurality of straight wire lengths having a primary axis and of approximately equal length;

forming a tapered portion onto one end of each wire length;

assembling the plurality of straight wire lengths into a bun-

dle so that the axes of the wire lengths are generally parallel but non-coplanar to one another and with the tapered end portion of each wire length being located at the same end of the bundle;



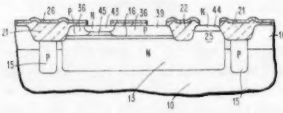
welding the wires together at the other end of the bundle;
inserting the welded bundle into the sleeve; and
securing the bundle of wires to the sleeve.

4,242,791

HIGH PERFORMANCE BIPOLAR TRANSISTORS FABRICATED BY POST EMITTER BASE IMPLANTATION PROCESS

Cheng T. Horng, Fishkill; Harold V. Lillja, Peekskill, and David K. Seto, LaGrangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 21, 1979, Ser. No. 77,699
Int. Cl.³ B01J *17/00*
U.S. Cl. 29—578 **10 Claims**



1. In a method for forming a bipolar transistor said method including the following steps:

(a) forming a subcollector region of a first conductivity type in a monocrystalline semiconductor substrate of a second conductivity type;

(b) forming an annular shaped isolation region in said substrate that at least encompasses said subcollector region;

(c) depositing an epitaxial layer of semiconductor material on said substrate;

(d) forming a silicon dioxide layer on said epitaxial layer;

(e) forming a silicon nitride layer on said silicon dioxide layer;

(f) opening an annular shaped trench in said exposed surface of said substrate, said trench having a depth less than the thickness of said epitaxial layer, said annular shaped trench being superimposed over said annular shaped isolation region and including a portion to be utilized in providing collector reach through isolation;

(g) exposing said substrate to an oxidizing atmosphere to provide recessed silicon dioxide in said annular shaped trench and said portion utilized in providing collector reach through isolation;

(h) remove the silicon nitride layer formed in step (e) supra;

(i) implant impurities of a first conductivity type into a predetermined region of said epitaxial layer to provide collector reach-through;

(j) form a silicon nitride layer over said exposed surface of said substrate;

(k) open an emitter contact window, a base contact window and a collector contact window in said silicon nitride layer and underlying silicon dioxide to expose three regions on said epitaxial layer, said three regions on said epitaxial layer respectively corresponding to said emitter contact region, said base contact region and said collector contact region;

(l) deposit a metal film over the exposed surface of the said substrate;

(m) utilize the substrate as an anode in an electrolytic cell, whereby the metal film over said emitter contact region, said base contact region and said collector contact region are respectively anodized to form first, second and third metal oxide regions on the exposed surface of said substrate;

(n) remove the unoxidized metal film whereby said first, second and third metal oxide regions remain on the surface of the substrate; and

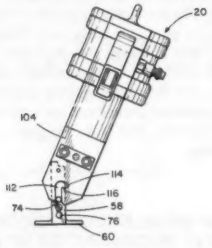
(o) additional steps further characterized in that said first metal oxide region is utilized to align the emitter and provide for post emitter ion implantation of the base.

4,242,792

PORTABLE TOOL FOR MASS TERMINATION CONNECTOR

Peter Kirsinas, Jr., Country Club Hills, Ill., assignor to Panduit Corp., Tinley Park, Ill.

Filed Jun. 4, 1979, Ser. No. 45,578
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—857 **16 Claims**



1. A portable tool for simultaneously terminating a plurality of conductors in a connector positioned in a connector support which is mounted on a wiring board or the like, said connector comprising a housing defining a series of spaced wire-receiving cavities and a metallic terminal element having a wire-receiving portion disposed in each cavity, said conductors being positioned in alignment with said cavities, said tool comprising:

means for detachably mounting said tool on said connector support;

a ram which reciprocates relative said connector;

an insertion assembly carried by said ram and including a plurality of wire insertion fingers for moving said conductors into said cavities;

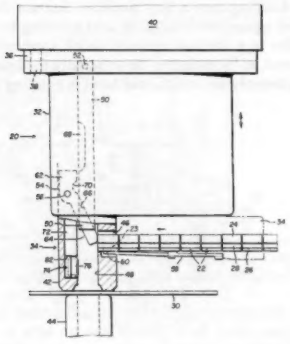
movable cutter means carried by said ram adjacent said dieset; and

fixed cutter means underlying said conductors when said tool is mounted on said support, said movable and fixed cutter means cooperating to sever excess portions of said conductors substantially flush with a wall of said housing as said ram extends causing said wire-insertion fingers to move said conductors into said cavities where they are terminated in the wire-receiving portions of said terminal elements whereby a single tool can be used to terminate conductors in a plurality of connectors held at spaced locations on said wiring board.

4,242,793
NUT GUIDE FOR INSTALLATION HEAD

Horton Matthews, Brighton; Kenneth V. York, Howell, and Dale H. Goodsmith, Livonia, all of Mich., assignors to Multifastener Corporation, Detroit, Mich.

Filed May 25, 1979, Ser. No. 42,658
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—798 10 Claims



1. In a nut installation head having a nut passage rceiving a plurality of nuts, a transverse plunger passage communicating with said nut passage, a plunger reciprocating in said plunger passage through the intersection of said passages to install a nut received in said plunger passage from said nut passage, a feed means feeding a nut successively into said plunger passage, said head having an apertured nose portion, said plunger passage extending through said nose portion, said nut passage extending into said nose portion, and said plunger being movable through said nose portion, the improvement which comprises a nut guide for said head including:

a generally cylindrical slot within said nose portion parallel to and displaced laterally of said plunger passage, below said nut passage;

and a nut guide assembly within said slot including a split semi-tubular resilient retainer means nested within said slot having a semi-tubular recess parallel to said plunger passage with a predetermined internal first radius, facing said plunger passage;

and a metallic dowel of generally cylindrical shape having a predetermined second external radius, greater than said first radius, positioned within said slot parallel to said plunger passage, laterally and guidably nested partly within said retainer recess, with surface portions thereof throughout its height bearing against said retainer means, a radial portion of said dowel extending into said plunger passage to guidably support a nut within said plunger passage;

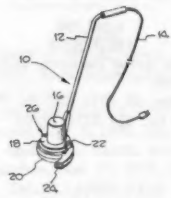
successive downward movement of said plunger moving said nut along said dowel and adapted to forcefully project said nut into piercing and interlocking registry with a metallic panel underlying said nose, said dowel guidably engaging said nut during its downward movement;

said dowel adapted for transverse movement and resilient deforming engagement with said retainer means further into its recess as said nut is moved past said dowel, said dowel under the expansive action of said retainer means automatically returning into said plunger passage to its initial nut supporting position.

4,242,794
UNIVERSAL BLOWER ATTACHMENT UNIT

Clayton R. Peterson, 308 Avenida Santa Margarita, San Clementa, Calif. 92672

Filed Feb. 27, 1979, Ser. No. 15,630
Int. Cl.[3] B25F *3/00*
U.S. Cl. 30—122 19 Claims



1. A blower attachment for a line trimmer including a trimmer housing and drive shaft; said attachment comprising:

a blower housing having an air inlet and an air outlet said blower housing being secured in a position spaced from said trimmer housing, and said inlet being disposed between said blower housing and said trimmer housing;

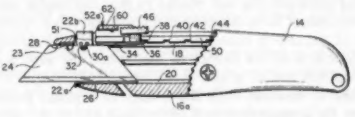
an impeller mounted for rotation in said blower housing and having means coupling said impeller to said drive shaft for moving air from said inlet to and out of said outlet, said impeller including a shaft extending out of said blower housing toward said trimmer, said shaft carrying a second impeller outside of said blower housing for providing cooling air to said trimmer; and

means for releasably securing said blower housing to said trimmer housing in a position placing said receiving means on said impeller in operative connection with said drive shaft.

4,242,795
KNIFE HANDLE

Ernest J. Rollband, Brooktondale, N.Y., and Robert F. West, West Simsbury, Conn., assignors to The Stanley Works, New Britain, Conn.

Filed Feb. 2, 1979, Ser. No. 8,877
Int. Cl.[3] B26B *1/08, 5/00*
U.S. Cl. 30—162 3 Claims



1. An elongated knife handle having a blade opening at the forward end thereof, a blade carrier within said handle for mounting a blade for longitudinal movement between a sheathed position in which it is stored in the handle and an extended unsheathed position, and a longitudinal slot extending along the top of the handle in general alignment with the longitudinal plane passing through said blade opening, said blade carrier including a latching member providing a thumb button extending through said top slot for manipulation of the blade carrier between its sheathed and unsheathed positions, the improvement wherein an integral upstanding abutment is provided on the top of the handle adjoining the forward end of the top slot, said abutment extending higher than said thumb button to shield the thumb button from inadvertent pressure when the thumb button is positioned at the forward end of the slot with the blade in its unsheathed position and manual pressure is applied to the handle during cutting operations, the carrier having a flexible upstanding arm which extends through said top slot forwardly of the thumb piece, said arm

including means for securing the blade on the blade carrier, said handle providing a forward extension to the top slot for receiving the flexible arm when the blade is in its unsheathed position and a lateral recess for receiving the flexible arm when it is deflected laterally removed the blade, and said abutment being longitudinally tunneled to permit the arm to pass under the abutment.

4,242,796

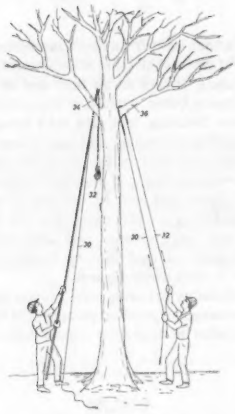
TREE SAW

Victor Barausch, and Anton Barausch, both of 4902 Imperial, Houston, Tex. 77401

Filed Sep. 19, 1979, Ser. No. 77,136

Int. Cl.[3] B27B *21/00*

U.S. Cl. 30—166 R **5 Claims**



1. A saw operable from ground level for cutting limbs from a tree compsing a plurality of saw blades, each blade comprising a relatively short, thin, flat-sided member having cutting teeth on its edge, and means connecting the saw blades in spaced, end-to-end relationship for relative pivotal movement around axes perpendicular to the flat sides thereof said connecting means being equal to or less in width than the saw blades and connects the saw blades so that the blades and the connecting means lie in the same place and the force applied to the ends of the saw is transmitted to the saw blades along the longitudinal axis of the blades so that when the saw is positioned over the top of a tree limb, the individual saw blades will assume a position with the blades in a plane generally transverse the longitudinal axis of the limb and in the plane of the forces that are alternately applied to the end saw blades to move the blades back and forth across the limb to cause the teeth to cut through the limb.

4,242,797

ROTARY NYLON LINE VEGETATION CUTTER

Vincent A. Palmieri, and John P. Palmieri, both of 3745 El Camino Dr., San Bernardino, Calif. 92410

Division of Ser. No. 925,045, Jul. 17, 1978, Pat. No. 4,185,381. This application Jun. 28, 1979, Ser. No. 53,101

Int. Cl.[3] A01D *50/00*

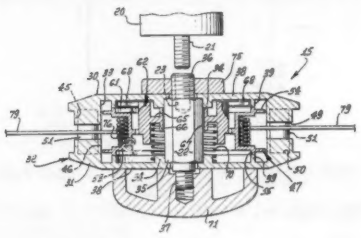
U.S. Cl. 30—276 **8 Claims**

1. In a flexible line whirling vegetation cutting hand tool, a rotary head for which is provided to be supported by and manipulated on the lower end of a relatively long handle equipped with power means for rapidly spinning said head on a vertical axis, the improvement comprising the following combination of elements;

an annular, cylindrical, double radially flanged spool providing an external peripheral storage space for winding a reserve supply of flexible cutting line thereon, said spool having a relatively large diameter bore provided with suitable circumferentially equally spaced stops;

a rotary head including a housing providing a cylindrical chamber freely rotatably confining said spool and having at least one peripheral window for the withdrawal of a free end portion of said line from said spool for use in vegetation cutting, the centrifugal force thus generated in said free line portion tending to powerfully unwind said reserve line by rotating said spool relative to said housing;

indexing means spring biased to translate said means axially on said housing into a first position thereon for locking said spool against such rotation, said indexing means being responsive to a vertical upward shock applicable to said rotary head, as by swinging downwardly the handle of the power assembly on which said head is rotating at its nor-



mal speed, until said head strikes the ground while so rotating, to produce a reverse translation of said indexing means axially to a second position which frees said spool, tentatively permitting it to rotate through a predetermined angle to facilitate withdrawal of a corresponding amount of reserve line from the spool and releasing it through said window to supplement the pre-existing length of said free line end portion, and thereupon automatically concluding said bumping cycle by resuming its initial vertical spool locking position; and

a braking means associated with said indexing means which is automatically responsive to an excessive centrifugal force being currently generated by a supplemented length of said free cutting line end portion, to inhibit the immediate consummation of a consecutively additional bumping cycle.

4,242,798

HAND HELD BAND SAW

Mark W. Wikoff, Cincinnati, Ohio, assignor to Best & Donovan, Cincinnati, Ohio

Division of Ser. No. 881,734, Feb. 27, 1978, Pat. No. 4,160,320, which is a continuation-in-part of Ser. No. 785,037, Apr. 6, 1977, abandoned. This application Dec. 15, 1978, Ser. No. 969,854

Int. Cl.[3] B27B *13/08*

U.S. Cl. 30—380 **2 Claims**

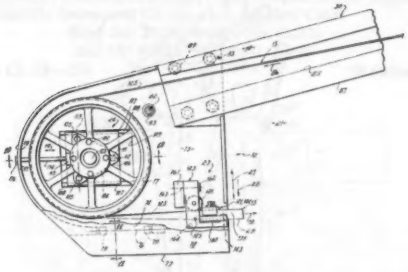
1. A blade take-up assembly for an idler wheel of a band saw of the endless blade type, said blade take-up assembly being connected within said saw's idler wheel housing, said blade take-up assembly comprising

a slide plate slidably mounted in a hole defined in said idler wheel housing, said idler wheel housing having ribs along parallel and spaced side edges of said hole, and said slide plate having rails along opposed side edges thereof, said rails being slidably received on said ribs,

a mounting plate carrying said idler wheel in rotatable relation thereon, said mounting plate being pivotally mounted to said slide plate by at least two spaced bolts, each of said bolts being oriented generally normal to said slide plate and said mounting plate, the bolted connection between said slide plate and said mounting plate being not structur-

ally rigid for permitting a limited tilting motion of said mounting plate relative to said slide plate about a phantom tilt axis defined by said spaced bolts and generally normal to said bolts,

a first threaded shaft threadedly connected to said slide plate and extending exteriorly of said housing through said housing hole, said threaded shaft being adapted to bear against said mounting plate, the position of said first



threaded shaft relative to said slide plate determining the angular position of said idler wheel relative to said slide plate, and

a second threaded shaft threadedly connected to said slide plate, a head on said second shaft being adapted to bear against the exterior surface of said idler wheel housing, the position of said second threaded shaft relative to said slide plate determining the position of said idler wheel relative to a driven wheel of said band saw.

4,242,799

CAR SHAVER AND HOLDER THEREFOR

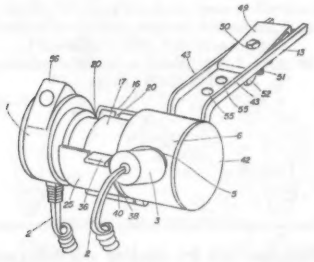
Atsumi Kameyama, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 7, 1978, Ser. No. 931,528

Claims priority, application Japan, Aug. 17, 1977, 52-110409[U]; Aug. 17, 1977, 52-110410[U]; Aug. 25, 1977, 52-114189[U]; Aug. 30, 1977, 52-118043[U]; Sep. 5, 1977, 52-120314[U]; Mar. 14, 1978, 53-32876[U]; Mar. 14, 1978, 53-32877[U]

Int. Cl.³ B26B *19/38*

U.S. Cl. 30—43.1 **5 Claims**



1. An electric shaver comprising a cutting portion formed on one end of a body of said electric shaver, a motor disposed in said body of said shaver, a hood slidably secured around the body of said shaver for alternately protecting and exposing the cutting portion of said shaver, a spring means which depresses said slidable hood into a first position of protecting the cutting portion from ambience, a lock mechanism for locking said slidable hood in a second position, thereby exposing the cutting portion to ambience, a switching means comprising a normal open switch which controls the power supply to said motor, said switch comprising a pair of conductive leaves which are separated from each other when said hood is in said first position and are in contact when said hood is in said second position, and an actuator which forms a protrusion on one end of said slidable hood and engages and depresses one of said pair of conductive leaves toward the other of said pair of conductive leaves so as to automatically supply power to said motor when said hood is placed and held in said second position.

4,242,800

GARMENT DESIGNING AID

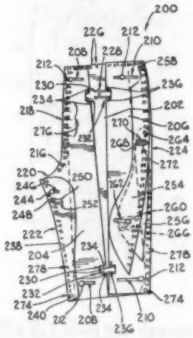
Fred W. K. R. Werber, 29 Schaumans-kamp, Reinbeck, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 853,668, Nov. 21, 1977, Pat. No. 4,156,969. This application Mar. 1, 1979, Ser. No. 16,669

Claims priority, application South Africa, Mar. 9, 1977, 77/1434; United Kingdom, Nov. 19, 1976, 48456/76

Int. Cl.³ A41H *3/015*

U.S. Cl. 33—14 **1 Claim**



1. A garment design aid for assisting a person in providing a pattern for a garment, the design aid including

a main pattern template defining a hip region of the garment and including a hip adjusting means comprising:

a first member that is pivotally attached at one end to the pattern template member on one side of the hip region, has at its other end a slot-extending circumferentially of said pivotal attachment that will allow movement of said first member across said main pattern template and has a suitably curved side edge;

a second member that is pivotally attached at one end to the first member intermediate the first member's ends adjacent the hip region, has a substantially outwardly extending slot transverse to the slot in said first member and has a suitably curved side edge which cooperates with the side edge of the first member to define a variable hip profile of the garment;

a pin fast with the main pattern template member and extending through the slots in the first and second members such that pivoting of the first member causes the second member to pivot about its attachment to said first member and to slide along said transfer slot in a suitable manner; and

a securing means for securing the first and second members in a desired configuration.

4,242,801

BOWLING BALL GAUGE

John D. Ellison, 2451 W. 234 St., Torrance, Calif. 90501

Filed Mar. 9, 1979, Ser. No. 19,097

Int. Cl.³ G01B *5/25*

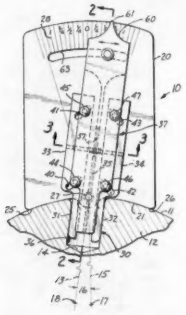
U.S. Cl. 33—174 F **2 Claims**

1. A gauge for measuring the divergence at the surface of a bowling ball between the axis of a bore entering said ball at said

surface and a radius of the ball which intersects said axis at said surface, said gauge comprising:

a reference member comprising a plate bearing at least a pair of contact points for contacting the surface of the bowling ball, and a pivot axis between and spaced from said contact points, said pivot axis being normal to said plate, said points and said pivot axis lying substantially upon a surface having a diameter approximating that of an average bowling ball;

an expandable plug pivotally mounted to the reference member at said pivot point, said plug having a plug axis which is coincident with said bore axis when inserted in said bore and comprising a frame and two contactors, each contactor having a contact surface parallel to said plug axis, said contact surfaces being substantially parallel to one another, and movable toward and away from one another while remaining substantially parallel so as to expand against and contact the inside wall of said bore, said ball



radius passing through said pivot axis when said plug is in said bore and said points bear against said surface of said bowling ball, and bias means intermediate said contactors for biasing said contactors apart from one another;

alignment means comprising a pair of parallel slots in each contactor, said slots being axially spaced apart from one another and oblique to said plug axis, the slots of opposite contactors being directly opposed to one another and oppositely inclined, and pin means mounted to said frame and engaging in each of said slots, and further including a shaft normal to the plane of said contact surfaces and spaced from said pivot axis and entering both of said contactors, said shaft cooperating with said biasing means so as to prevent axial shear motion relative to them while permitting them to move toward and away from one another;

a pointer mounted to said plug; and

a scale on said reference plate to cooperate with said pointer to indicate said divergence.

4,242,802

DRAWING PATTERN FOR THE HUMAN FORM

Rolf-Dieter Jenner, Tamm; Dieter Schäfer, and Wolfgang O. Bauer, both of Leonberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

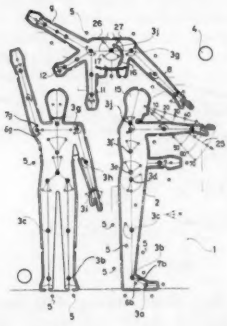
Filed May 17, 1979, Ser. No. 40,078

Claims priority, application Fed. Rep. of Germany, May 20, 1978, 2822151

Int. Cl.³ B41N *1/24*

U.S. Cl. 33—174 B **12 Claims**

1. A stencil plate for showing on a drawing the contour and disposition, to a predetermined scale, of the human body in a variety of attitudes of the body, for facilitating the design of man-machine interface structures for control of a vehicle or machine, comprising a thin flat plate having at least one outline of one view of a human body with a succession of line slots through said plate along said outline so as to permit said outline to be drawn, except for short interruptions, through said slots, and having pivot holes respectively located at places within a said outline corresponding to joints of the body thereby represented, whereby outlines may be drawn at least in part for a variety of body postures in the same direction of view by rotating the stencil plate about a pivot hole between stages of



tracing the body outline through the stencil, said at least one outline of one view of a human body being an outline of a view from above of a human body with an erect torso which view includes at least two outlines of an arm, in respectively different positions, connected to the same shoulder; an arm outline in at least one position for each shoulder ; and slots for showing the position of the knees in a seated attitude of the body.

4,242,803

EQUIPMENT UNIT FOR CHECKING DEFORMATIONS OF A VEHICLE BODY

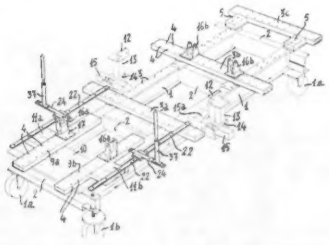
Alain Dory, Saint Colombre, France, assignor to Celette S.A., Vienne, France

Filed Apr. 16, 1979, Ser. No. 30,139

Claims priority, application France, Apr. 21, 1978, 78 11833

Int. Cl.³ G01C *15/12*; G01B *11/26*

U.S. Cl. 33—288 **6 Claims**



1. An equipment unit for checking any deformations of a vehicle body, comprising a checking bench constituted by a platform having at least two longitudinal members pierced with holes for fixing various components in order to secure the vehicle body to be checked, as well as a plurality of cross members which can be fixed at different points along the longitudinal members of said platform and on which are provided series of uniformly spaced holes, wherein said unit further comprises two removable sole pieces of elongated shape and each provided with a lateral appendage on one side, said sole pieces being intended to be fixed on the checking platforms substantially in the central axis of the front side members of the vehicle to be checked, said sole pieces as well as the lateral

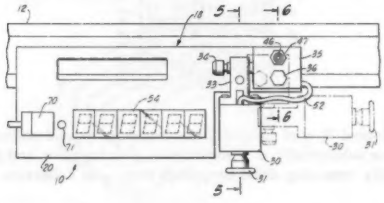
appendages thereof being provided in the same manner as the cross-members with series of uniformly spaced holes for fixing therein body attachment elements and/or measuring or checking accessories.

4,242,804

UNIVERSAL DIGITAL CONVERTER FOR DRAFTING MACHINES

Wolfgang P. Buerner, Flintridge, Calif., assignor to Los Angeles Scientific Instrument Co. Inc., Los Angeles, Calif.

Filed Jul. 27, 1979, Ser. No. 61,526
Int. Cl.³ G01B 3/12; B43L 13/02
U.S. Cl. 33—438 **19 Claims**



1. That improvement in a drafting machine of the type having a unitary horizontal and vertical scale assembly bodily pivotable as a unit about the axis of the protractor scale ring of said machine, which improvement comprises:

an incremental encoder secured to and pivotable with said unitary scale assembly, said encoder having a sensing wheel adapted to have continuous rolling contact with underlying sheet material and freely rotatable in either direction to sense the net movement of said sensing wheel over said sheet material thereby to generate electrical signals proportional to the rotary movement of said wheel over said sheet material; and

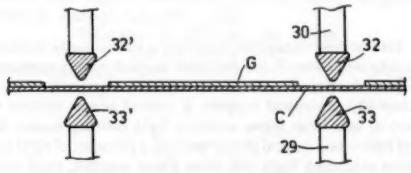
means, including digital electronic readout means securable to said drafting machine adjacent said encoder, providing an instantaneous precision readout of the net movement of said sensing wheel in either direction from a previous position thereof.

4,242,805

METHOD AND APPARATUS FOR DRYING A THICK WET LAYER COATED ON ONE FACE OF A CARDBOARD SHEET

Henri de Angelis, Macon, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Jul. 2, 1979, Ser. No. 53,795
Claims priority, application France, Jul. 7, 1978, 78 20245
Int. Cl.³ F26B 3/34
U.S. Cl. 34—1 **4 Claims**



1. A method for drying a cardboard sheet having two opposed side edges and two faces, said sheet having a thick wet layer coated on one of said faces, said method comprising:

(a) feeding said cardboard sheet continuously along a predetermined path;

(b) applying a first high frequency electric field to said sheet such that the lines of force of said electric field penetrate only said thick layer to selectively heat said layer; and

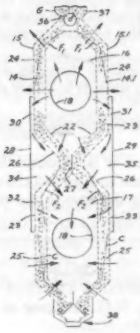
(c) further applying a second electric field to said sheet such that the lines of force of said second electric field penetrate through at least said cardboard sheet, whereby the application of said second electric field begins before the application of said first electric field.

4,242,806

STACKED AIR DRYER WITH AIR RECIRCULATION

Jay L. McClaren, P.O. Box D, Dassel, Minn. 55325

Filed Mar. 29, 1978, Ser. No. 891,451
Int. Cl.³ F26B 3/14
U.S. Cl. 34—13 **18 Claims**



1. A grain dryer comprising

an upright grain column passage means having a top inlet and a bottom outlet, the passage means having upright and aligned top and bottom passage segments and a pair of intermediate passage segments therebetween, said passage means having opposite obverse and reverse sides defined by perforate walls confining the grain column therebetween and passing air therethrough and into and through the grain column,

enclosure means at the reverse side of the full length of the passage means and engaging the passage means adjacent the inlet and outlet and intermediate segments to define enclosed upper and lower plenums respectively adjacent the top, bottom and intermediate passage segments,

air treating means heating and inducing flow of air in a duct from the lower plenum to the upper plenum for producing flow of heated drying air outwardly through the grain column in said top passage segment and in the adjacent intermediate passage segment to produce drying thereof, a portion of the air supplied from the lower plenum being drawn from the atmosphere and through the grain column at the bottom passage segment for cooling the grain,

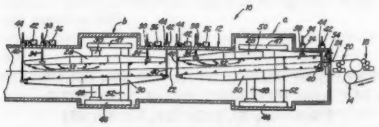
an upright panel confronting the obverse side of the passage means adjacent said intermediate passage segments, the panel also extending upwardly and downwardly partly along the top and bottom passage segments, and

the intermediate passage segments of the passage means being obliquely offset with respect to the top and bottom passage segments and with respect to each other and being spaced from the panel to cooperate with the panel in defining a return air plenum receiving drying air from the upper plenum and from the adjacent grain column and passage means wherein drying of the grain column is effected, and returning the air to the lower plenum and through the adjacent grain column and passage means to effect additional drying of the grain column.

4,242,807
PAINT LINE FLOTATION OVEN

Curt Braun, Riverside, Calif., assignor to Hunter Engineering Co., Inc., Riverside, Calif.

Filed Aug. 11, 1978, Ser. No. 932,801
Int. Cl.³ F26B 3/10
U.S. Cl. 34—23 6 Claims



1. A method of curing a film of paint on a travelling stip, said method comprising the steps of:

conveying a travelling strip having a coat of paint thereon through a plurality of heating zones in an oven along a catenary path;

directing jets of gas onto the strip with sufficient velocity and in a direction such as to effect at least partial flotation of the strip;

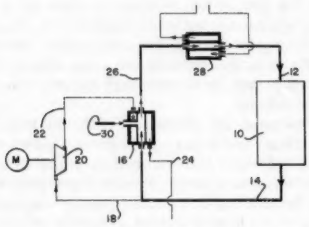
sensing the angle of the travelling strip at some point along said path; and

adjusting the amount of flotation of the strip caused by said gas jets in response to a sensed change in said angle so as to vary tension in the strip in the direction to counteract said change in angle.

4,242,808
PAPER WEB DRYING SYSTEM AND PROCESS

Oscar Luthi, Nashua, N.H., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 22, 1978, Ser. No. 963,008
Int. Cl.³ F26B 3/04
U.S. Cl. 34—23 4 Claims



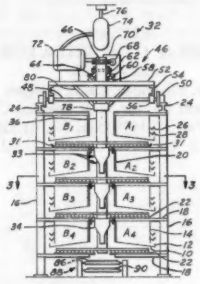
1. A method of drying a paper web in a paper mill comprising: directly contacting the paper web with superheated steam to evaporate the water in the paper web by direct contact and exhausting said steam; feeding a major portion of the exhaust steam to a superheater, and a minor portion of the exhaust steam to a compressor where it is compressed and heated for use in other elements of the paper mill; superheating said major portion of the exhaust steam; and using said superheated steam in the drying of the paper web.

4,242,809
METHOD AND APPARATUS FOR PRESERVING PROTEIN IN ANIMAL DROPPINGS

Joseph T. Elder, Box 21, Lakeview, Ohio 43331

Filed Dec. 8, 1976, Ser. No. 748,651
Int. Cl.³ F26B 3/04
U.S. Cl. 34—33 15 Claims

1. A method of handling animal droppings to retain protein therein comprising: collecting fresh animal droppings on a generally horizontal collection surface, forcing a flow of room temperature air over droppings on said surface to effectively dry droppings thereon, periodically agitating the droppings on the collection surface to expose all surfaces of the droppings to

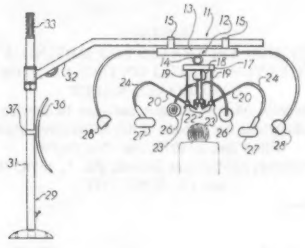


said forced flow of air to dry the droppings on said collection surface substantially to a nonbacteria growing state, and periodically removing dried droppings from said collection surface.

4,242,810
HAIR STYLING APPARATUS

David M. Bianco, 2408 Broadwater Ave., Billings, Mont. 59102

Filed May 24, 1979, Ser. No. 42,074
Int. Cl.³ A45D 20/16
U.S. Cl. 34—98 9 Claims

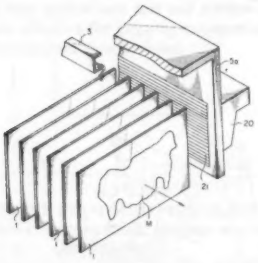


1. Hair styling apparatus including a substantially horizontally disposed cross frame member, support means extending upwardly from said cross frame member engageable with a substantially horizontal support, a central power section attached to said cross frame member, light emitting means disposed below said central power section, a plurality of rigid arm sections extending from said cross frame member, rigid cross arm members pivotally connected adjacent the free ends of said rigid arm sections, said pivotable connections between said rigid arm sections and said rigid cross arm members including means for adjusting the ease of movement between respective sections, flexible conduit means extending from each of said cross arm members, electrical appliances disposed on the free ends of said flexible conduit means, said electrical appliances including light emitting means, hot air conveying means and the like.

4,242,811
THERMO-PNEUMATIC UNIT AND APPARATUS FOR THERMAL TREATMENT OF TRAVELLING FLAT MATERIALS

Aritsune Moriyama, Nishinomiya, and Kunio Kida, Kasai, both of Japan, assignors to Sanko Air Plant, Ltd., Osaka, Japan

Filed Jan. 3, 1979, Ser. No. 766
Claims priority, application Japan, Jan. 7, 1978, 53-000712
Int. Cl.³ F26B *15/22*
U.S. Cl. 34—150 **2 Claims**



1. An improved thermo-pneumatic unit for thermal treatment of travelling flat animal hides, comprising:

means for transporting a plurality of animal hides in a vertically disposed spread state along a prescribed travel path in parallel planes and spaced relationship to each other, the planes including said spread animal hides being substantially perpendicular to said travel path;

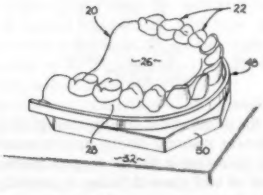
a blower of hot air arranged close to one lateral side of said travel path and having an outlet for said hot air facing said travel path, said blower including means for generating a laminar flow of hot air, deflection means between said outlet and said travel path for downwardly directing at least a lower portion of said hot air flow, and means for controlling the mass/velocity distribution of said laminar flow in such a manner that the mass flow rate of said flow is higher adjacent the lower portion of said outlet, said downwardly directed lower portion of said hot air flow rising as said lower portion of said flow approaches the hides, so that a relatively high mass flow of hot air traverses the center portion of each of said animal hides, said center portion having a relatively high initial moisture content as compared with the remainder of the hide; and

means for supplying said hot air to said blower.

4,242,812
TYPODONT HAVING REMOVABLE TEETH

Ivan H. Randoll, 60 Camino La Madera, Camarillo, Calif. 93010, and Robert C. McShirley, Glendale, Calif., assignors to Ivan H. Randoll, Camarillo, Calif.

Filed Feb. 26, 1979, Ser. No. 15,418
Int. Cl.³ G09B *23/28*
U.S. Cl. 434—263 **3 Claims**



1. A typodont comprising:

a jaw member including a base and a gum section on said base;

said gum section defining a plurality of spaced-apart openings which are arranged in the general shape of an arch, and said jaw member further defining an elongated groove generally extending about said arch, said groove being in communication with each of said openings;

a plurality of removable tooth members, each removable tooth member comprising a crown and a shank, and each of said shanks defining a notch which is in substantial alignment with said groove when said removable tooth members are inserted into said openings;

a generally U-shaped locking ring which cooperatively engages said groove, with said ring having a locking portion which extends into each of said openings when said locking ring is inserted into said groove;

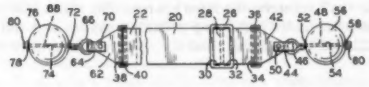
wherein said locking ring has a gripping portion with a generally L-shaped cross-section which extends around the entire outer periphery of said locking ring so that said locking ring may be easily gripped;

whereby said removable tooth members may be inserted into said openings and locked therein by placing said locking ring into said groove thereby causing said locking portion of said locking ring to engage said notch in each of said removable tooth members.

4,242,813
SKI EQUIPMENT TRANSPORT AND SECURITY METHOD AND APPARATUS

Raymond P. Quance, 5509 Mason Dr., Fort Wayne, Ind. 46809

Filed Mar. 8, 1979, Ser. No. 18,630
Int. Cl.³ A43D *5/00*; A45C *0/00*; A43B *5/00*
U.S. Cl. 36—132 **14 Claims**



1. Transport apparatus for a pair of ski boots each boot having an inner space adapted to receive the foot of the wearer of the boot and having an upper portion with an opening therein adapted to receive the leg of the wearer of the boot and including means for selectively constricting the opening when the boot is worn, said transport apparatus comprising: a pair of voluminal members dimensioned to be inserted through the openings and into the inner spaces of the respective boots when the openings are in their unconstricted states, and to be in close fitting emplacement within the boot inner spaces and securely retained therein when the boot openings are constricted, and an elongated, flexible carrying support secured to said voluminal members at spaced apart locations on said carrying support.

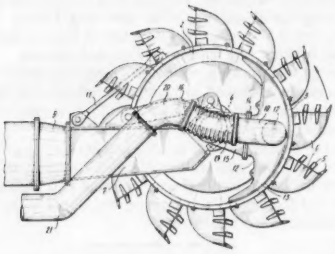
4,242,814
CUTTER WHEEL FOR A DREDGING APPARATUS

Marten Fluks, Vianen, Netherlands, assignor to Conrad-Stork B.V., Haarlem, Netherlands

Filed Feb. 23, 1979, Ser. No. 14,551
Claims priority, application Netherlands, Feb. 27, 1978, 7802151
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—66 **5 Claims**

1. A cutter wheel for a dredging apparatus having a suction pipe and a ladder comprising a cylindrical body having at least one partially open flat side and a cylindrical circumferential surface including openings arranged at equal distances with respect to each other, on which openings outwardly projecting cutting blades are provided; said body being adapted to be mounted on the free end of the ladder of the dredging apparatus by means of an approximately horizontally positioned shaft

extending along the axis of symmetry of the body and said body being mounted for rotation about said shaft, said body having a stationary suction mouth disposed therein provided with a suction aperture being directed to the inner side of the cylindrical circumferential surface and connected to the suction pipe of the dredging apparatus by means of a bent member extending through the open side of the body to the interior thereof, means being provided for changing the angular position of the said mouth by rotation about the axis of symmetry of the body, wherein: the suction mouth is formed of a box shaped body having an open side forming the suction aperture



and shaped in the form of an arc of a circle, which is positioned in proximity to the inner side of the cylindrical circumferential surface of the cutter wheel body, an opening being provided in the side of the box shaped body directed to the open side of the cutter wheel body on which the one open end of the bent member is mounted, the other end of which being connected to the first end of a flexible tube, the second end of which is connected to the suction pipe; said mouth being connected to the shaft whereby the mouth is rotatable about said shaft and a piston-cylinder unit being provided having one end pivotally attached to the ladder and the other to the suction mouth.

4,242,815

SUCTION PIPE POSITION CONTROL

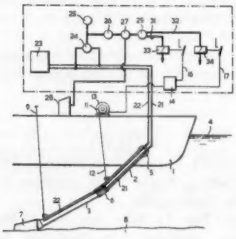
Teunis Vermeulen, Papendrecht, Netherlands, assignor to Koninklijke Bos Kalis Westminster Group N.V., Netherlands

Filed Apr. 21, 1978, Ser. No. 898,536

Claims priority, application Netherlands, Apr. 28, 1977, 7704643

Int. Cl.³ E02F *3/88*

U.S. Cl. 37—58 **8 Claims**



1. A method for the continuous and automatic control of the angle of inclination of the last section of a suction pipe provided with a drag head relative to the sea bottom of a trailing suction dredger having a suction pipe consisting of more than one section comprising the steps of

(a) maintaining said drag head via a swell compensator in contact with the sea bottom at the required pressure, and

(b) continuously and automatically controlling said angle of inclination of said last section of suction pipe relative to the sea bottom by varying the depth of the connecting point between said last section and the section immediately adjacent it.

4,242,816

DREDGER HAVING A TWO-PART BOOM

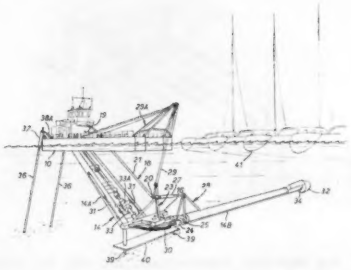
René H. Jeanson, Auzay, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Jun. 15, 1978, Ser. No. 915,884

Claims priority, application France, Jun. 23, 1977, 77 19280

Int. Cl.³ E02F *3/88*

U.S. Cl. 37—67 **4 Claims**



1. A dredger comprising a floating body, a two-part boom having a raised, rest position and submerged, operative position and including a first boom part pivotally mounted at its rear end about a horizontal axis on said floating body and a second boom part having at its front end a disintegrating tool, a platform disposed between the front end of said first boom part and the rear end of said second boom part, means for maintaining the platform horizontal, means pivotally mounting the rear end of said second boom part on said platform about a vertical axis, said second boom part extending in its raised, rest position substantially entirely outwardly beyond the longitudinal confines of the floating body so as to enable the disintegrating head to operate beneath floating obstacles in its submerged, operative position, means mounting the rear end of said second boom part on said platform for vertical swinging movement relative to said platform about a horizontal axis, and means for adjusting the angle of said second boom part relative to said platform between a horizontal position and other positions of inclination.

4,242,817

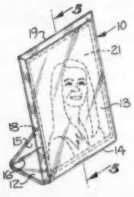
HOLDER

Donald M. Ballard, 7300 Leesburg Rd., Charlotte, N.C. 28215

Filed Jan. 8, 1979, Ser. No. 1,733

Int. Cl.³ A47G *1/06*; G09F *1/12*

U.S. Cl. 40—152.1 **2 Claims**



2. A holder for pictures and the like comprising an integral sheet of transparent material having approximately one sixth thereof folded to defing a linear support portion, approximately one half of said sheet defining a generally rectilinear face portion having predetermined width and length dimensions and joined to said support portion at a first fold line and

extending therefrom at an acute angle with said support portion, and the remainder of said sheet opposite said face portion defining a linear brace portion joined to said support portion at a second fold line parallel to and spaced from said first fold line and forming acute angles with said support and face portions, said brace portion having an end portion remote from said second fold line and which terminates adjacent and in close proximity to said face portion at an area defined by an angled cross section through said sheet and spaced from said first fold line at a distance of about one half of said length dimension, and said material having such resilience as to exert in said area between said face portion and said end portion of said brace portion a force effective for gripping engagement with a picture or the like inserted therebetween.

4,242,818

COLLAPSIBLE PHOTOGRAPHIC SLIDE VIEWER

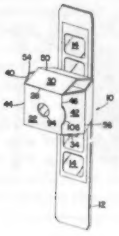
Robert G. Carver, Ashland, Ohio, assignor to Creative Cartons of Ashland, Inc., Ashland, Ohio

Filed Nov. 29, 1978, Ser. No. 964,474

The portion of the term of this patent subsequent to Nov. 27, 1996, has been disclaimed.

Int. Cl.³ G09F *13/00*

U.S. Cl. 40—364 **14 Claims**



1. A collapsible optical viewer for viewing photographic slides, comprising:

(a) a front wall having a light-admitting opening therein;

(b) a reinforced rear wall assembly having a viewing aperture therein, said aperture having an optical axis coincident with said opening;

(c) a magnification lens disposed in said aperture;

(d) a top wall contiguous with said front wall along a transverse fold line and adhered to said rear wall assembly;

(e) a bottom wall contiguous with both of said front wall and said rear wall assembly along a pair of spaced transverse fold lines;

(f) a pair of opposing side walls contiguous with said rear wall assembly along a pair of spaced longitudinal fold lines;

(g) a pair of glue flaps contiguous with said front wall along a pair of spaced longitudinal fold lines, said glue flaps being adhered to portions of said side walls; and,

(h) a film strip receiving channel outwardly proximate said front wall, said channel comprising;

(i) a channel wall comprised of an extension of a first of side walls, contiguous therewith along a longitudinal fold line;

(ii) a light-admitting opening in said channel wall coincident with said optical axis; and,

(iii) a light-diffusing element disposed in the opening in said channel wall.

4,242,819

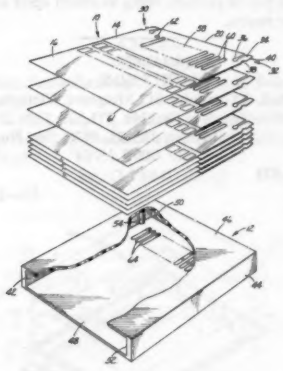
MICROFICHE CARRIER ASSEMBLY

William R. Swift, Placentia, and Clyde E. LeFevre, Orange, both of Calif., assignors to AM International, Inc., Los Angeles, Calif.

Filed May 22, 1978, Ser. No. 907,906

Int. Cl.³ G09F *11/30*

U.S. Cl. 40—513 **9 Claims**



1. A microfiche carrier, comprising:

a core of flexible but relatively rigid sheet material having a pair of faces and a first and a second end;

a thin cover sheet secured to the core and extending beyond said second end of the core to provide at least one flap overhanging the second end for receiving an edge of a microfiche; and

carrier selector means comprising a plurality of parallel, elongate slots in said cover sheet, a like plurality of elongate slots in said core in registration with the slots in said cover sheet, and a single perforation at a predetermined location in said cover sheet and core distinct from the locations of said slots.

4,242,820

CONTAINER FOR PHOTOGRAPHIC PRINTS

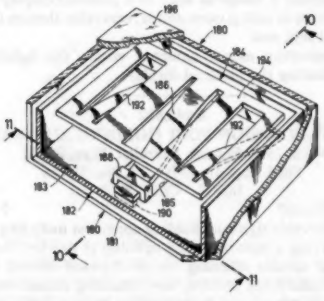
Peter Ackeret, Küsnacht, Switzerland, assignor to Licinvest AG, Chur, Switzerland

Filed Sep. 18, 1978, Ser. No. 943,367

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742347

Int. Cl.³ G09F *11/30*

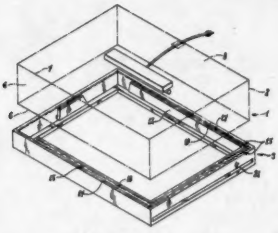
U.S. Cl. 40—513 **21 Claims**



1. A container for accommodating a variable number of photographic prints, comprising enclosure means having a print compartment confining the prints in a pile and defining a viewing window through which a print is displayed, the enclosure also having operable means providing access into the print

compartment for removing the pile of prints, and a backing device having print-engaging means in spaced and confronting relation with the window to confine the pile including a variable number of prints therebetween, the backing device also including variable means adjacent the compartment for variably changing the spacing between the print-engaging means and the window to lift and urge the pile toward the window and to urge the displayed print in the pile firmly against the window, said pile of pictures being loosened upon actuating of said operable means.

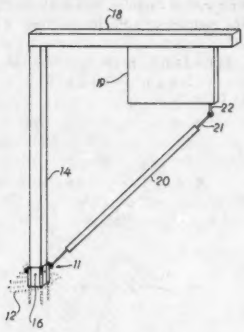
4,242,821
LIGHT BOX
John C. McNeil, 2 Glencairn St., Mulgrave, Victoria, Australia
Continuation-in-part of Ser. No. 771,326, Feb. 23, 1977, abandoned. This application Jul. 25, 1978, Ser. No. 927,836
Int. Cl.³ G09F *13/04*
U.S. Cl. 40—571 **12 Claims**



1. A light box comprising:
(a) a peripheral wall having opposite peripheral edges;
(b) a backwall adjacent one of said peripheral edges;
(c) a rigid one piece molded frame adjacent the other of said peripheral edges, said frame defining one side of the light box, said frame comprising;
(i) front and rear faces and inner and outer side faces;
(ii) gripping means including a rearwardly opening channel on said frame clampingly receiving the other said peripheral edge of said peripheral wall, said channel extending inwardly from said rear face towards said front face, said channel being defined by a pair of opposed flanges each of which defines a respective one of said inner and outer side faces;
(iii) a groove in the inner side face of said frame and extending around the periphery thereof;
(iv) a slot in a portion of said frame extending therethrough between the inner and outer side faces, said groove and said slot being substantially co-planar whereby a marginal edge of a pictorial display is held captive in said groove and is receivable therein through said slot; and
(d) illuminating means mounted within the lightbox for illuminating the pictorial display.

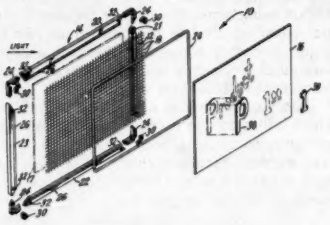
4,242,822
REMOVABLE SIGN POST HOLDING APPARATUS
John W. Black, 1940 Papago, Sheridan, Wyo. 82801
Filed Aug. 31, 1979, Ser. No. 71,766
Int. Cl.³ G09F *7/18*
U.S. Cl. 40—607 **7 Claims**

1. A removable sign post holding apparatus including a body portion having a post-receiving opening at the top thereof, a plurality of tubular retaining means disposed around the periphery of said body portion, said retaining means extending along the length of said body portion from a point adjacent said post-receiving opening thereof, a plurality of ground-engaging members removably and slidably engageable with said tubular retaining means and extending from adjacent said post-receiving opening of said body portion beyond the opposite end of said body portion a significant distance, whereby said body portion is secured to the ground by said members, each of said ground-engaging members having an enlarged



portion adjacent the end thereof closest to said post-receiving opening.

4,242,823
MAGNETICALLY ATTRACTIVE DISPLAY DEVICE
John Bruno, 77-83 Second Ave., Patterson, N.J. 07524
Filed Aug. 30, 1977, Ser. No. 829,149
Int. Cl.³ G09F *7/04*
U.S. Cl. 40—621 **10 Claims**

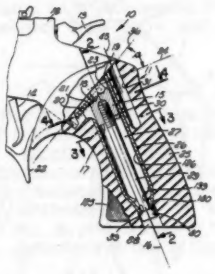


1. A lightweight display device for supporting magnetized indicia characters, which comprises:
a generally sheet-like first member being magnetically attractive at spaced intervals, said first member comprising a woven mesh screen of strands of magnetically attractive material, said woven mesh screen being formed from two sets of closely spaced parallel strands of said material, which sets extend essentially perpendicular to each other;
a frame member adapted to maintain the strands of said woven mesh screen in a generally planar configuration;
a substantially lightweight generally sheet-like second member adapted to provide at least a background for said magnetized indicia characters, said second member being held in a generally flat configuration adjacent said first member by said frame member and said second member being sufficiently flexible to be held directly against said first member between said magnetized indicia characters and said first member without requiring additional fastener means; and
a generally lightweight, sheet-like backing member attached to said device adjacent said first member on the opposite side thereof from said second member, such that magnetized indicia characters may be removably attached in desired positions against said second member by magnetic attraction between said first member and the magnetized indicia characters and said second member is held adjacent said first member only by said frame member and the magnetic attraction between said indicia characters and said first member.

4,242,824
PISTOL GRIPS HAVING CUSHIONING RECESSES

Frank A. Pachmayr, Los Angeles, and Jack R. Farrar, Whittier, both of Calif., assignors to Pachmayr Gun Works, Inc., Los Angeles, Calif.

Filed Jan. 3, 1979, Ser. No. 764
Int. Cl.³ F41C *23/00*
U.S. Cl. 47—71 P 34 Claims

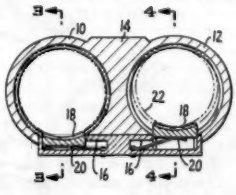


1. A pistol grip comprising:
a grip body of elastomeric material adapted to be connected to the frame of a pistol with said frame projecting forwardly from an upper portion of the grip body;
said elastomeric material containing a recess within which a grip mounting portion of said frame extends downwardly;
said body being dimensioned to be gripped in the hand of a user when attached to the pistol frame, with the user's fingers extending across the front of the grip body, and with outer surfaces of said elastomeric material exposed for contact with the user's hand;
said elastomeric material containing a cushioning recess which is located rearwardly of said first mentioned recess and gives to the grip body greater compressibility in a front to rear direction at that location than if said elastomeric material were solid at the location of the cushioning recess, to thereby increase the absorption of recoil force.

4,242,825
FIREARM MECHANISM

Fred L. deBoer, Honolulu, Hi., assignor to Sherry Miles deBoer, Walnut Creek, Calif.

Filed Feb. 28, 1979, Ser. No. 16,011
Int. Cl.³ F41C *27/00*
U.S. Cl. 42—1 R 5 Claims

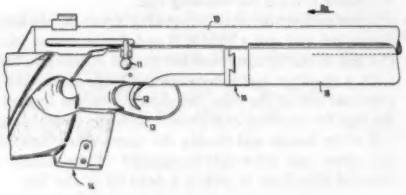


1. A firearm comprising
a barrel having a discharge end,
an ignition chamber in said barrel remote from the discharge end for supporting a cartridge during ignition with the ignition chamber having a predetermined diameter for receiving a cartridge of substantially said predetermined diameter,
said barrel having a minimum diameter less than the predetermined diameter, and
means forming a permanent part of the firearm for excluding from the portion of the barrel outside of the chamber cartridges having diameters which are less than the predetermined diameter and greater than the minimum diameter.

4,242,826
FIREARM

Elfi Anschütz, Schwalbenweg 79, D 7900 Ulm/Donau, Fed. Rep. of Germany

Filed May 17, 1978, Ser. No. 906,750
Claims priority, application Fed. Rep. of Germany, May 23, 1977, 2723110
Int. Cl.³ F41C *23/00*
U.S. Cl. 42—73 5 Claims



1. A firearm comprising a barrel, a receiver, and a stock wherein the stock is divided into a main stock and a forestock connected by a pivoting guide which establishes a pivoting of the forestock along a circular path, the center of said circular path being coincident with the bore axis of the barrel, and wherein the forestock is fixable in each of its positions relative to the barrel.

4,242,827
FISHING LURE

Wyatt B. Smith, Crosbyton, Tex., assignor to Doyle A. Reddig, Crosbyton, Tex., a part interest

Filed Apr. 19, 1979, Ser. No. 31,405
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.1 18 Claims

1. A fish lure comprising:
a. an elongated flat spring metal strip,
b. attachment means onto the front of the spring metal strip for attachment of a fishing line,
c. a fish hook attached to the back of the spring metal strip, and
d. a flexible covering surrounding the spring metal strip,
e. said strip about twenty times as wide as it is thick and about thirty times as long as it is wide.

4,242,828

FLY SWATTER

Severin G. Schurger, and Judith Schurger, both of 3266 SW. 25 Ter., Miami, Fla. 33133

Filed Apr. 25, 1979, Ser. No. 33,130
Int. Cl.[3] A01M *3/02*
U.S. Cl. 43—137 9 Claims

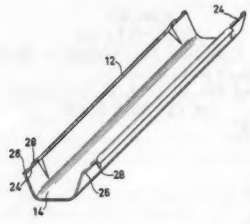
1. An improved fly swatter comprising:
a working end,
a handle, the handle being elongate and having a terminal distal end, the terminal distal end having a recess inwardly extending toward the working end,
a separate pick-up member comprising a pair of legs having a terminal end and a proximal end, hinge means joining the legs at the terminal end for hinged connection therewith, a shoulder means between the hinge means and the proximal end of the legs, the shoulder means formed on the legs for abutting engagement with the terminal distal end of the handle and closing the recess when inserted in the recess and releasably connected to the handle for removal therefrom to pickup a dead fly or the like.

4,242,829

CONNECTING DEVICE

Anders P. Arnström, Generalsvägen 80, S-184 02 Österskär; Lennart K. Dahlgren, and Britt I. Dahlgren, both of Utsiktsvägen 10, S-436 00 Askim, all of Sweden

Filed Oct. 24, 1978, Ser. No. 954,229
Claims priority, application Sweden, Oct. 13, 1978, 7810717
Int. Cl.[3] A63H *23/00;* E04D *13/00;* F16B *7/18, 7/04*
U.S. Cl. 46—91 2 Claims



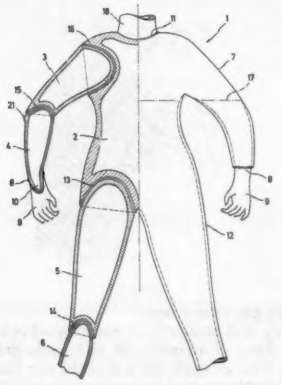
1. A device for providing a waterproof connection between two sections of a water canal in a toy kit which comprises a connecting element having substantially a U-shaped cross-section, wherein the legs of the U-shaped element are elastically bendable, said connecting element having transversally positioned sealing strips on the inner face thereof, at least two pairs of gripping snap elements provided opposite each other at the outer portions of said elastically bendable legs of the connecting element, each of said snap elements including a curved guiding surface facing a corresponding guiding surface of the opposite member of the respective pair of snap elements such that the end of a similarly U-shaped canal section may be inserted between the guiding surfaces of said snap elements for locking with said connecting element under said gripping snap element.

4,242,830

THREE DIMENSIONAL LIMBED DOLL

Maria T. Hauser, Frühlingstrasse 8, D-8216 Reit im Winkl, Fed. Rep. of Germany

Filed Apr. 4, 1979, Ser. No. 27,168
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814473
Int. Cl.[3] A63H *3/20*
U.S. Cl. 46—161 7 Claims



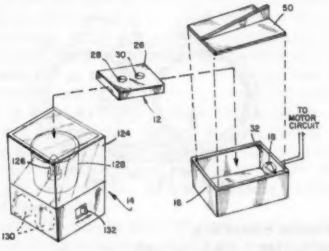
1. A doll having movable jointed air and fluid-tight body parts comprising a main body part and limb parts, the latter being preformed individually, a one piece body-shaped covering bag of air and fluid-tight material defining generally the final outline of said doll, joint regions between said limb parts being formed by a juxta-position of said limb parts within appropriate portions of said bag which alone holds said limb parts in their correct pivoted relationship with each other, and a fluid filling means introduced into the space between said body and limb parts and said covering bag.

4,242,831

TOY APPARATUS WITH PHOTOEMISSIVE MOTOR CONTROL SYSTEM

John F. O'Shaughnessy, Staten Island, N.Y., assignor to Ned Strongin Associates, Inc., New York, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,016
Int. Cl.[3] A63H *17/00, 33/00;* H01H *47/24;* F21K *2/00*
U.S. Cl. 46—251 10 Claims



1. A photoemissive control system for a toy apparatus having a body portion, comprising
a photoemissive phosphorescent member,
an enclosed chamber within said body portion and sized to receive said phosphorescent member therewithin,
light dependent means mounted within said chamber for producing an electrical output in response to impingement

thereon of a predetermined value of photoemission from said photoemissive fluorescent member,

electrical load means mounted in said toy apparatus and operative to provide an output in response to electrical energization,

direct current power source means, and

electrical circuit means connecting said light dependent means, said power source, and said electrical load means for energizing said load means when said phosphorescent member is placed in said chamber after exposure to light,

said light dependent means being adapted to render said load means inoperative when photoemission from said phosphorescent member drops below said predetermined value.

4,242,832

PROCESS FOR PREPARING MONOKARYONS BY DEDIKARYOTIZING DIKARYOTIC STRAINS OF BASIDIOMYCETES

Gerlind Eger, Leckergässchen 2, 3550 Marburg an der Lahn, and Hermilo Leal Lara, Richtsberg 88-602, Marburg an der Lahn, both of Fed. Rep. of Germany

Filed Mar. 26, 1979, Ser. No. 23,772

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1978, 2813521

Int. Cl.³ A01G *1/04*

U.S. Cl. 47—1.1 **15 Claims**

1. A process for preparing a monokaryon by dedikaryotizing a dikaryotic strain of Basidiomycetes comprising the following steps: (a) mechanically fragmenting the mycelium of a dikaryotic strain of Basidiomycetes in an aqueous medium to give viable mycelial fragments having predominantly one to a very few hyphal compartments, (b) introducing a small potion of the mycelial fragments so obtained into a dedikaryotizing solution containing glycine and at least one carbon source, (c) incubating the fragments, while keeping them covered by at least 2 mm of said dedikaryotizing solution, to allow the fragments to grow into spatially isolated mycelial pellets, (d) inspecting random samples of said mycelial pellets to determine the degree of dedikaryotization, (e) fragmenting visible mycelial pellets in an aqueous medium to give hyphal fragments having one or a very few cells, (f) placing the resulting hyphal fragments on or in a nutrient agar plate and allowing said fragments to grow into spatially isolated individual monokaryotic colonies, and (g) transferring at least one of said monokaryotic colonies to new nutrient medium.

4,242,833

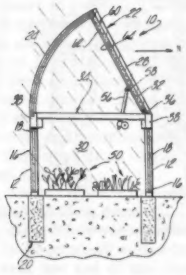
GREENHOUSE AND METHOD OF GROWING PLANTS IN COLD CLIMATES

Reed E. Maes, Jr., Ypsilanti, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Feb. 26, 1979, Ser. No. 15,391

Int. Cl.³ A01G *9/18*

U.S. Cl. 47—17 **8 Claims**



1. A greenhouse consisting of an enclosure defining an interior space within which plants are to be grown, said enclosure including a ceiling portion thereof consisting of a pond of water extending atop said enclosure and means supporting said layer of water, including sheets of a material transparent to those portions of solar radiation supporting photosynthetic processes in plants grown, whereby said water layer acts to absorb the longer wavelength infrared radiation in the solar spectrum while transmitting the photosynthetic component of solar radiation, said water layer also acting as a thermal storage media; and a plurality of pivotal reflector-insulator panels mounted to said greenhouse enclosure to be movable between a first position whereat said panel is positioned immediately over said water pond and a second position tilted above said water pond, and wherein each of said pivotal reflector-insulator panels consists of a panel member and includes an insulating layer, whereby said panel may be positioned over said water during periods of low or no solar radiation to minimize heat losses from said water pond to the exterior of said greenhouse.

4,242,834

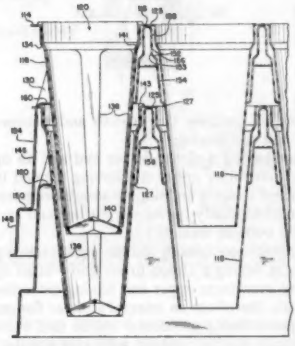
NESTABLE AND STACKABLE TRANSPLANTING SYSTEM

Robert C. Olsen, Streamwood, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 19, 1979, Ser. No. 86,546

Int. Cl.³ A01G *23/02*

U.S. Cl. 47—73 **9 Claims**



1. In an assembly adapted for growing a plurality of plants intended to be transplanted, a support tray configured for cooperation with a plurality of plant receiving sleeves integrally interconnected at their upper regions by web means,

said support tray being a thin-walled plastic material having integral sidewalls, an open bottom, and grid-like upper structure, said sidewalls taper upwardly and inwardly from their lower edges, which define the perimeter of the open bottom,

the grid-like structure comprising a plurality of longitudinal and lateral generally vertically directed wall means extending upwardly from a first horizontal plane which includes the upper extremities of the sidewalls, the plurality of longitudinal and lateral wall means defining, at least in part, a plurality of apertures through which plant receiving sleeves may be inserted, the vertical wall means being generally V-shaped in cross section and defining a first vertical dimension from the upper apex of the V-shaped cross section to the lowermost region of said vertical wall means which is at said first horizontal plane, the vertical distance from the lower edges of the sidewalls to the apex of the V-shaped cross section of said wall means defining a second predetermined vertical dimension, each vertical wall means including a pair of wall sections which are interconnected at the apex and laterally spaced at their

intersection with said horizontal plane, the plant receiving sleeves depending downwardly from the web means and arranged in a pattern permitting the web means to be disposed on apices of the V-shaped cross sections with the sleeves depending between said vertical wall means, each of the sleeves having walls tapering downwardly and inwardly from the uppermost extremity to the lowermost extremity, the vertical dimension of each sleeve being substantially greater than said first predetermined vertical dimension and less than said second predetermined vertical dimension.

4,242,835

CONTAINER FOR THE INDIVIDUAL TRANSPORTATION OF PLANTS

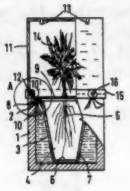
Ramon Mondragon Sorribes, Reverendo Marti 11 & 13, Meliana, Valencia, Spain

Filed Mar. 9, 1979, Ser. No. 19,186

Claims priority, application Spain, Mar. 10, 1978, 234.563; Feb. 19, 1979, 241.472

Int. Cl.[3] **A01G** *9/02, 27/00*

U.S. Cl. 47—84 **3 Claims**



1. A container unit for the growth and transportation of plants, said unit comprising:

a container having a closed lower end and an open upper end, said container upper end having formed in the interior thereof a recess defining an annular step including an annular substantially horizontal surface and an inner substantially vertical surface;

a soil receptacle containing soil having therein a plant, said receptacle having a closed lower end and an open upper end, said receptacle upper end having extending radially outwardly therefrom an integral annular flange;

said receptacle being positioned within said container in a substantially coaxial manner with said annular flange of said receptacle being supported by said annular horizontal surface of said container, and said annular flange being soldered to said annular horizontal surface to form a hermetically sealed chamber defined by the outer surface of said receptacle and the inner surface of said container;

said annular flange having extending therethrough an orifice for the introduction of water into said chamber;

plug means for closing said water introduction orifice to prevent the leakage of water from said chamber;

said receptacle having therein, adjacent said lower end thereof, small orifice means for allowing water to pass from said chamber to said soil in said receptacle to achieve automatic capillary irrigation of said plant in said soil;

disc means for retaining said soil within said receptacle, said disc means having therein a central hole dimensioned to have extend therethrough the stem of said plant, said disc means having therein slit means extending from the periphery of said disc means to said central hole for enabling said stem of said plant to be inserted into said central hole, said disc means being positioned over and supported by said annular flange of said receptacle, and said disc means having an outer edge precisely fitting within said vertical surface of said recess of said container; and

a transparent cover including an open lower end having edge means precisely fitting within said vertical surface of said recess of said container for securely retaining said cover to said container and for pressing said disc means against said annular flange of said receptacle to thereby maintain said disc means in an operative position to retain said soil within said receptacle.

4,242,836

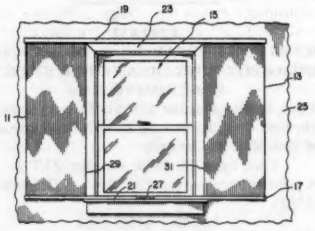
ENERGY CONSERVING SECURITY SHUTTERS

Harold E. Anderson, 1460 E. River Rd., Grand Island, N.Y. 14072

Filed Aug. 2, 1978, Ser. No. 930,425

Int. Cl.[2] **E06B** *9/00*

U.S. Cl. 49—63 **10 Claims**



1. A sliding drapery covered shutter assembly for insulating a window and for securely closing a window opening about such window which comprises upper and lower track members, at the inside top and bottom of the window, respectively, a sliding shutter, slidable in said track members to open and closed positions, in the open position of which access may be had to the window from the inside and in the closed position of which the shutter closes off said window and maintains an insulating dead air space about it, which shutter is covered on the inside by a drapery member which is slidable with it and which exerts an additional insulating effect.

4,242,837

FINE GRINDING APPARATUS

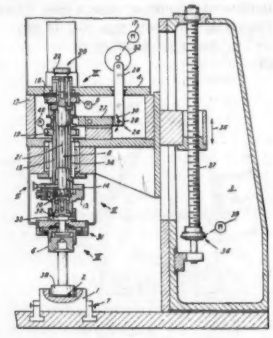
Siegfried Lohse, Stenbreite 18, Fuldabrück 1, Fed. Rep. of Germany (3501)

Filed Jun. 22, 1979, Ser. No. 50,958

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827543

Int. Cl.[3] **B24B** *35/00*

U.S. Cl. 51—59 R **10 Claims**



1. A fine-grinding apparatus comprising:

a stationary stand having an arm and a workpiece holder;

a tube defining a tube axis;

means for mounting said tube on said arm for displacement angularly and axially thereon;

a tool mount adapted to hold a tool and having a tool axis generally parallel to said tube axis;

means for mounting said mount on said tube for displacement of said tool axis along a diameter through said axis and fixed angularly relative to said tube;

tube adjustment means for rotating said tube on said arm about said tube axis and for locking said tube in any of a plurality of angularly offset positions for adjustment of the angular orientation of said diameter on said tube;

a shaft angularly and axially displaceable in said tube and having an end provided with a pin inclined to said axis and operatively engaging said tool mount;

shaft adjustment means for axially displacing said shaft in said tube and for locking said shaft in any of a plurality of axially offset positions for adjustment of the eccentricity of said tool axis relative to said tube axis; and

drive means for rotating said shaft about said tube axis relative to said tube and thereby diametrically reciprocating said tool mount relative to said shaft through a diametrical stroke proportional to said eccentricity of said tool axis.

4,242,838

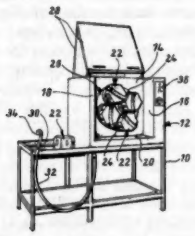
CENTRIFUGAL DRUM APPARATUS

Manfrid Dreher, Engelsbrand, Fed. Rep. of Germany, assignor to Dr. Ing. Manfrid Dreher GmbH & Co. K.G., Engelsbrand, Fed. Rep. of Germany

Filed Nov. 6, 1978, Ser. No. 957,704

Int. Cl.³ B24B *31/04*

U.S. Cl. 51—164.2 **3 Claims**



1. In a centrifugal drum apparatus for finishing the surfaces of metal objects including a housing (12), a generally disk-shaped rotor member (26) connected with said housing for rotation about a generally horizontal first axis, a cylindrical stationary rotor bearing collar member (90) connected with said housing and containing a longitudinal through-opening coaxial with said first axis, a plurality of cylindrical finishing drums (22) each being open at one end and arranged with its longitudinal axis extending parallel with said first axis, said drums being symmetrically arranged about said first axis and being rotatably connected with said rotor member, first drive means for rotating said rotor member about said first axis, and second drive means for rotating said finishing drums about their longitudinal axes, respectively, whereby when the metal objects are introduced into said drums, they are polished during the rotation of said drums about their longitudinal axes, the improvement wherein said rotor member includes:

(a) a plurality of finishing drum bearing means, each of said bearing means including

(1) a bearing housing (64) adapted to receive the open end of one of said finishing drums;

(2) a bearing shaft (80) arranged within said bearing housing with its longitudinal axis extending parallel with said first axis, one end of said shaft being connected with said second drive means;

(3) a receiving flange (82) arranged at the other end of said shaft; and

(4) a connector device (24) for connecting one of said finishing drums with said bearing receiving flange;

(b) a drive shaft (48) extending longitudinally through said rotor bearing collar member through-opening, said first drive means being connected with one end of said drive shaft, said drive shaft having a hub portion (62) arranged at its other end;

(c) first brace members (66) extending radially from said hub portion and being connected with said finishing drum bearing housings;

(d) second brace members (67) connecting the adjacent bearing housings; and

(e) an annular bracing plate (68) connected with said drive shaft hub portion, said bracing plate including a plurality of openings (72), each of said openings being adapted to receive one of said bearing housings.

4,242,839

HIGH-SPEED POWER TOOL

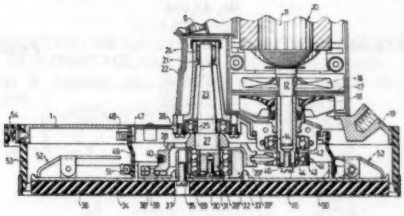
Gerhard Armbruster, Stuttgart-Plieningen; Albert Kleider, Waldenbuch, and Eberhard Vogel, Dettenhausen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 797,503, May 16, 1977, abandoned, which is a continuation of Ser. No. 624,105, Oct. 20, 1975, abandoned. This application Oct. 23, 1978, Ser. No. 954,630

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1974, 7436615[U]

Int. Cl.³ B24B *23/00*

U.S. Cl. 51—170 MT **13 Claims**



1. An oscillatory finishing tool comprising, in combination,

a housing provided with a handle for the user of the finishing tool to hold while using the tool;

a crank mounted in the housing for rotation about a crank rotation axis and including an eccentric portion;

a drive motor accommodated in the housing and coupled to the crank for rotating the latter about the crank rotation axis;

a roller bearing unit encircling and engaging the eccentric portion of the crank;

a discrete annular sleeve of a material of relatively high specific weight encircling and engaging the roller-bearing unit;

a discrete support plate structure for supporting a sheet of sandpaper or the like, the support plate structure having a first face facing the annular sleeve and having a second face, the second face being an exposed face for supporting a sheet of sandpaper or the like in direct surface-to-surface contact with the second face;

the annular sleeve having at least one threaded axial mounting bore and the support plate structure having in correspondence thereto at least one axial mounting passage extending all the way through the support plate structure from the second to the first face thereof;

at least one mounting screw having a threaded shank extending through the mounting passage and threaded into the mounting bore of the annular sleeve and having a head pressing the first face of the support plate structure towards the annular sleeve,

the head of the mounting screw being exposed to direct access for a screwdriver or the like when a sheet of sandpaper or the like is removed from the second face of the supporting plate structure,

the support plate structure when removed from the tool exposing the annular sleeve and the roller-bearing unit for access and the support plate structure being made of a material of relatively low specific weight, whereby the center of gravity of the combination of the annular sleeve and the support plate structure is located in the vicinity of the annular sleeve and spaced a distance from the support plate structure.

4,242,840

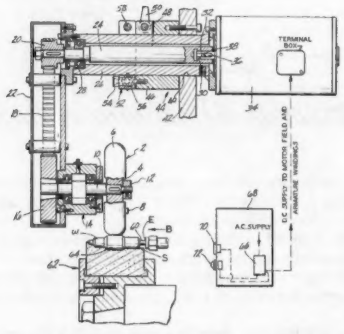
WORKPIECE DRIVE WHEEL FOR A GRINDING MACHINE

Kenneth J. Morris, Durham, England, assignor to Smiths Industries, London, England

Continuation of Ser. No. 901,031, Apr. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 801,931, May 31, 1977, abandoned, which is a continuation of Ser. No. 665,977, Mar. 11, 1976, abandoned. This application Aug. 3, 1979, Ser. No. 63,496

Int. Cl.³ B24B *5/18*

U.S. Cl. 51—236 **5 Claims**



1. Apparatus for cutting stock off of a preformed workpiece, said apparatus comprising:

(a) cutting means engageable with the workpiece for performing a cutting operation thereon;

(b) workpiece support means for rotatably supporting a workpiece to be cut by said cutting means;

(c) inflatable drive wheel means for frictionally engaging a workpiece to press the workpiece against said cutting means and to rotate the workpiece during a cutting operation;

(d) variable speed DC motor drive means capable of generating an output torque for rotating said drive wheel means; and

(e) control means electrically connected to said drive means for maintaining said drive means output torque at a substantially constant level during the entire cutting operation, thereby minimizing the length of the cutting operation without transmitting excessive force between said inflatable drive means and said workpiece.

4,242,841

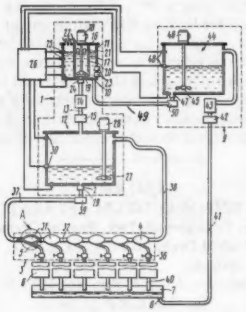
APPARATUS FOR PREPARING AND FEEDING AN ABRASIVE-CONTAINING SUSPENSION INTO THE ZONE OF ACTION OF WORK TOOLS OF POLISHING AND FINISHING LATHES

Vladimir F. Ushakov, ulitsa Starykh boloherrkov, 9, kv. 56; Alexandr I. Pergunov, Leninsky prospekt, 152, kv. 75; Albert V. Alexeev, ulitsa Ostuzheva, 1, kv. 6; Pavel N. Maslennikov, ulitsa 25 Yanvarya, 18, kv. 119, and Vladimir I. Seljutin, ulitsa Ilicha, 61, kv. 77, all of Voronezh, U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,405

Int. Cl.³ B24B *57/00*

U.S. Cl. 51—263 **2 Claims**



1. An apparatus for preparing and feeding an abrasive-containing suspension into the zone of action of a plurality of tools of polishing or finishing lathes, comprising: a unit for preparing and storing the suspension having ports for charging starting components, and having an outlet opening and a plurality of inlet openings; connecting pipes; a distributing unit formed with a pipe of a longitudinally variable cross section with sections of greater and smaller cross sectional areas, and said distributing unit having an inlet opening and an outlet opening along the direction of flow of the suspension; said distributing unit communicating through the said connection pipes connecting said inlet opening with the outlet opening of the unit for preparing and storing the suspension and through the said outlet opening connecting with one of the said inlet opening of the unit for preparing and storing the suspension; branch pipes corresponding in number to said lathes and branching off from the said pipe of variable cross section at the place of said sections of greater cross section and directed toward the said zones of action of the work tools of the said lathes; a reservoir for collecting a waste suspension located beyond the zones of action of the work tools along the direction of flow of the suspension and having an outlet; and a unit for cleaning the waste suspension, having an inlet opening and an outlet opening and said cleaning unit communicating through other connection pipes connecting said inlet opening with the said outlet opening of the reservoir for collecting the waste suspension and through the said outlet opening connecting with another of the said inlet openings of said unit for preparing and storing suspension.

4,242,842

PRECISION POLISHING SUSPENSION AND METHOD FOR MAKING SAME

Paul J. Yancey, Matthews, N.C., assignor to La Pierre Synthetique Balkowski, S.A., Annecy, France

Filed Aug. 8, 1979, Ser. No. 65,005

Int. Cl.³ C08J *5/14*

U.S. Cl. 51—298 **17 Claims**

1. A substantially non-toxic precision liquid polishing composition having nondrying characteristics consisting essentially of a fine abrasive polishing powder having a nominal particle

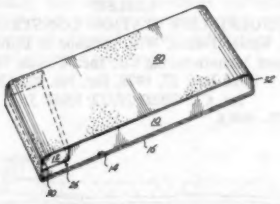
size of less than about 5 microns essentially permanently suspended in a viscuous liquid medium comprising water, glycerine and a carboxy polymethylene polymer thickening agent wherein the polishing powder makes up less than about 20 weight-percent of the entire composition and wherein the glycerine makes up at least about 25 weight-percent of the entire composition.

4,242,843

EXPANDABLE SANDING BLOCK FOR ENDLESS WRAP AROUND ABRASIVE BELTS

Jerry L. Phillips, 412-123rd Ave. SE., Lake Stevens, Wash. 98285

Filed Dec. 4, 1978, Ser. No. 966,065
Int. Cl.³ B24D *15/00*
U.S. Cl. 51—380 **4 Claims**



1. An abrading tool comprising:
a wrap-around, endless abrasive belt,
an elongated block having an uninterrupted right-rectangular planar bottom surface, upstanding surfaces substantially right-angularly disposed relative to each end of said bottom surface, and an overlying top surface;
means forming a transversely disposed wedge-cavity at one end of said top surface, said cavity consisting essentially of a ledge surface and an upright wedge wall angularly related to each other;
said ledge surface being located in said block intermediate between said bottom surface and its top surface;
said wedge wall being disposed transverse said block non-parallel to its adjacent upstanding end surface; and
a wedge member transversely slidable on the ledge surface relative said wedge cavity, said wedge member having a wedging surface functionally and frictionally related to said wedge wall, said wedge member being operable during the transverse sliding movements relative said wedge cavity to apply tension on said endless abrasive belt wrapped around said block.

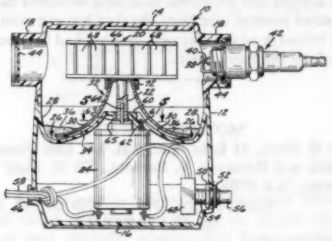
4,242,844

SPARK PLUG CLEANER WITH IMPROVED GRIT RECYCLING

James I. Tucker, Manhattan Beach, Calif., assignor to Orion Industries, Inc., Compton, Calif.

Filed Mar. 9, 1979, Ser. No. 19,166
Int. Cl.³ B24C *3/34*
U.S. Cl. 51—412 **5 Claims**

1. A spark plug cleaner comprising:
a housing having a confining wall and a vertical axis and at least one spark plug socket extending into said confining wall in the upper portion thereof for receiving and holding a spark plug with electrodes directed inwardly relative to said axis;
an impeller mounted on a shaft within said housing to rotate about said vertical axis at the level of said socket, said impeller comprising a horizontally disposed circular upper disk and a parallel annular lower disk spaced therefrom by a plurality of vanes with outwardly directed openings therebetween, said lower annular disk having a downwardly extending collar outside of a central circular opening therein,
an annular concave collection floor located below said socket and converging upwardly and inwardly in a smooth, arcuate, curved sloping surface toward said axis and upwardly and outwardly toward said confining wall,
an annular suction guide located interiorally of said confining walls and having a smooth, arcuate, curved sloping surface facing convex inward toward said axis and toward said collection floor in spaced disposition therefrom and



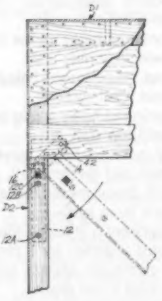
coaxial therewith to define an annular suction gap therebetween, whereby said collar of said lower disk overlaps said suction guide and resides in close proximity thereto, and
an electric motor for driving said shaft and said impeller to propel grit therein outwardly toward said spark plug socket whereby spent grit falls to said collection floor for recycling to said suction gap for reuse.

4,242,845

CONNECTING HINGE SYSTEM FOR PREFABRICATED BUILDING FOLDABLE PANEL STRUCTURES

George R. Osborne, Sr., 2815-35th Ave., W., Seattle, Wash. 98199

Filed Nov. 13, 1978, Ser. No. 960,474
Int. Cl.³ E04B *1/343*
U.S. Cl. 52—69 **1 Claim**



1. In a prefabricated building structure including hingedly connected roof panel and opposite wall panels foldable beneath the same and adapted to swing downwardly relative to the roof panel into depending upright positions with elevation of the roof panel, each of said wall panels having upright and horizontal structural members forming upper corners in the wall panel, connector hinge units each including a substantially flat base plate having first and second legs intersecting substantially in perpendicular relationship in a common vertical plane and further having a substantially flat transverse connector plate perpendicular to said base plate, said connector plate projecting at right angles from said first leg at a location intermediate one end of said first leg and its intersection with the second leg, said first leg and said transverse connector plate

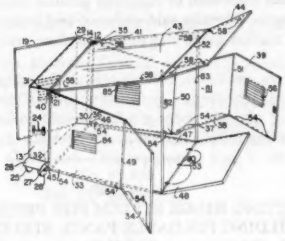
lying in mutually perpendicular planes and being respectively secured to such upright structural member and such horizontal structural member at said corner formed by such members, and means pivotally connecting the projecting end of said second leg to the roof panel to pivot thereon about a horizontal axis, whereby to guide the wall panel upper end into abutment with the underside of the roof panel adjacent the end of the latter when the wall panel is swung into upright position, said wall panel upright and horizontal structural members each comprising paired parallel members, the first leg and connector plate being bolted in position closely sandwiched between the members of the respective pairs.

4,242,846

MOTORCYCLE GARAGE

Roger B. Hurd, 21 Lake Ave., Apt. 1A, East Brunswick, N.J. 08816, and Roosevelt N. Barbosa, 275 N. Field Ave., West Orange, N.J. 07052

Filed Jun. 25, 1979, Ser. No. 51,792
Int. Cl.[3] E04B *1/346*
U.S. Cl. 52—71 **12 Claims**



1. A portable motorcycle garage, comprising:

an open rectangular frame having vertical left and right side walls and horizontal top and bottom walls, a vertical open front surface and a vertical rear surface;

first vertically oriented hinge means mounted within said frame adjacent said left side wall;

second vertically oriented hinge means mounted within said frame adjacent said right side wall,

said first and second hinge means being disposed different distances from said front surface;

third horizontally oriented hinge means mounted within said frame adjacent said top wall;

fourth horizontally oriented hinge means mounted within said frame adjacent said bottom wall,

said third and fourth hinge means being disposed different distances from said front surface;

a roof member comprising first and second generally rectangular panels hinged together by a roof hinge parallel to said third hinge means, an edge of said first panel being attached to said third hinge means;

a floor member comprising third and fourth generally rectangular panels hinged together by a floor hinge parallel to said fourth hinge means, an edge of said third panel being attached to said fourth hinge means;

a left side member comprising fifth and sixth panels hinged together by a left side hinge parallel to said first hinge means, an edge of said fifth panel being attached to said first hinge means, said fifth panel being generally trapezoidal and said sixth panel being quadrilateral;

a right side member comprising seventh and eighth panels hinged together by a right side hinge parallel to said second hinge means, an edge of said seventh panel being attached to said second hinge means, said seventh panel being generally trapezoidal and said eighth panel being quadrilateral;

a front door panel hinged to one of said sixth and eighth panels by a front door hinge parallel to a corresponding one of said first and second hinge means;

latching means for detachably securing to each other adjacent edges of said panels to form a motorcycle enclosure having a front end accessible via said front door and a rear end defined by said frame;

means for closing the rear surface of said frame;

vent means for permitting air to flow through said enclosure; and

weatherstrip means for sealing the edges of said panels adjacent said hinges;

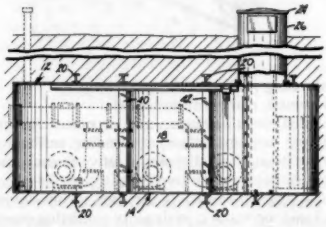
said hinge means, panels and front door being positioned and dimensioned to fold into said frame with one of said panels being relatively proximate to said front vertical surface and providing a closure therefor.

4,242,847

MODULAR LIFT STATION CONSTRUCTION

Robert G. Rezin, Tomah, Wis., assignor to Universal Sanitary Equipment Manufacturing Co., Inc., Tomah, Wis.

Filed Dec. 27, 1978, Ser. No. 973,637
Int. Cl.[3] E02D *29/12*; E03F *5/22*
U.S. Cl. 52—169.6 **2 Claims**



1. An enclosure for housing industrial equipment suitable to be buried underground, comprising:

at least two sections having a common top wall and floor, each of said sections having vertically extending side walls between said top wall and said floor, each side wall curved outwardly in a generally convex manner, said sections disposed adjacent to each other along a substantially horizontal elongation axis, said side walls of adjacent sections joined to each other along substantially vertical lines to define an enclosed equipment chamber, said enclosure having a maximum exterior width and a minimum exterior width measured along lines normal to said elongation axis, said adjacent sections joined to each other at said minimum exterior width; and

reinforcing members secured to said sections at said joints between adjacent sections and sized such that said reinforcing members do not extend beyond said maximum exterior width.

4,242,848

METAL STRIP EDGE PROTECTING AND REINFORCING CHANNEL

Sven Schoultz, Lidnersgatan 8, S-112 53 Stockholm, Sweden

Filed May 19, 1978, Ser. No. 907,749
Claims priority, application Sweden, May 24, 1977, 7706076
Int. Cl.[3] E04C *2/38*
U.S. Cl. 52—716 **5 Claims**

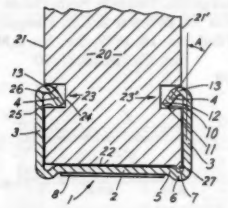
1. In combination, an edge protecting and reinforcing channel and a platelike member, said platelike member having an edge to be protected by said channel and two side surfaces extending from said edge, said side surfaces having grooves therein substantially parallel to said edge, said channel being formed of a single metal strip, said channel as seen in cross section including an exterior section and two legs substantially perpendicular thereto and arranged such that with the exterior

section extending along an edge of said platelike member, the legs extend along adjacent portions of the two opposite side surfaces of the platelike member, the free end portions of the legs being formed as inwardly bent edge flaps arranged to be introduced into said grooves in said side surfaces of the platelike member, and including the improvement comprising:

corner portions joining the exterior section to the legs and bent outwards and thereby forming a free space at the inside of each such corner portion to loosely cover the corners of the platelike member;

said bent edge flaps at the free end portions of the legs forming an acute angle relative to the legs, said bent edge flaps each having at the free end thereof an inner corner facing said exterior section, said bent edge flaps each having a top facing away from said exterior section and located at the bend joining said flaps to the respective legs;

said grooves being of substantially rectangular cross section and extending into said side surfaces substantially at a right angle thereto, said grooves each having opposed side walls respectively located nearest and furthest from said edge of said platelike member;



the distance between the edge of said platelike member and the nearest said side wall of said grooves slightly exceeding the distance between said exterior section and said inner corner of said bent edge flap, to press said exterior section of said channel tightly against said edge of said platelike member;

said inner corner of said bent edge flaps tending to cut into the material of said platelike member in said nearest side wall of said groove to resist sideward movement of said legs away from said side surfaces of said platelike member;

the distance between said top of said inwardly bent edge flap and said inner corner thereof being slightly smaller than the distance between the opposed said side walls of each said groove;

whereby after inserting said platelike member edge into said channel, with said inwardly bent edge flaps swung apart due to outward bending of said legs to receive said platelike member, said inwardly bent edge flaps of said channel can easily swing toward each other and enter said grooves.

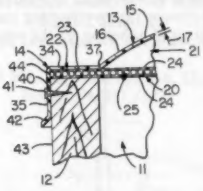
4,242,849

SKYLIGHT CONSTRUCTION AND METHOD

William D. Benkelman, Bloomfield Hills, Mich., and George C. Carlyon, Tampa, Fla., assignors to Dayco Corporation, Dayton, Ohio

Filed Jul. 3, 1978, Ser. No. 921,658
Int. Cl.³ E04B *7/18*
U.S. Cl. 52—741 **1 Claim**

1. In a method of making a skylight construction comprising the steps of; providing a support; providing an outer sheet made of a light-transmitting material and having a peripheral portion adjoining said support; disposing an inner structure made of a light-transmitting material and having a peripheral edge portion against said support; and attaching said peripheral edge portion to said support defining a first air space between said outer sheet and said structure; the improvement comprising the method steps of, constructing said inner structure of a pair of flat sheets each made of a synthetic plastic light-transmitting material, fixing said flat sheets in spaced parallel relation solely using a plurality of spaced parallel sheets to define a second air space therebetween, said ribs and flat sheets being made as a single-piece structure by extrusion process and of the same synthetic plastic material with said making and fixing



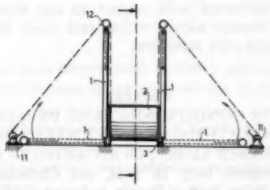
steps being simultaneously achieved during said extrusion process, said sheets and first and second air spaces enabling provision of said skylight construction having minimum weight yet providing minimum heat loss in winter and minimum heat gain in summer.

4,242,850

METAL WATER TOWER

Miklos Merenyi; Laszlo Huszar, and Janos Hidvegi, all of Budapest, Hungary, assignors to Vizügyi Tervező Vallalat, Budapest, Hungary

Filed Dec. 12, 1977, Ser. No. 859,929
Int. Cl.³ E04B *1/00*; E04G *21/00*
U.S. Cl. 52—745 **3 Claims**



1. A method of making a water tower comprising the steps of sequentially:

mounting each of a pair of generally two-dimensional support frames each having an upper portion and a pair of lower ground-engaging feet projecting therefrom for pivoting about respective horizontal axes at ground level;

pivoting said frames about the respective axes from down positions each extending generally horizontally and lying on the ground into up positions each extending generally vertically with said upper portions spaced apart;

hoisting up an said frames in said up positions on upwardly open U-section trough and positioning same between said upper portions; and

securing said U-section trough between said upper portions to form an upwardly open vessel and thereby fixing said frames and vessel together into a rigid assembly.

4,242,851

POLE CONSTRUCTION

Joe C. Pohlman, P.O. Box 15098, Pittsburgh, Pa. 15237, and James P. Romualdi, 5737 Wilkins Ave., Pittsburgh, Pa. 15213

Continuation-in-part of Ser. No. 841,740, Oct. 13, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,441
Int. Cl.² E04G *21/00*
U.S. Cl. 52—743 **7 Claims**

1. A pole construction comprising: a plurality of longitudi-

nally aligned elongated structural tube members, each of said tube members being of generally uniform outer dimensions, all of said tube members having progressively decreasing outer dimensions with respect to each other, with one end section of a larger dimension tube member overlapping in spaced relationship to the end section of the next smaller dimensioned tube member;

an annular body of non-metallic, non-shrinking means filling the spaces between the overlapping end sections of said tube members and adhering to the opposing surfaces of

the overlapping end sections for rigidly securing said overlapping tube members to each other;

said tube members and said annular body being constructed and arranged with respect to each other such that the joints formed between said tube members resists both axial tension and compression loads as well as bending moment imparted to the tube members; and

said tube members having their respective interiors generally unobstructed with respect to any structural filler material therein except within said space between said overlapping tube members.

4,242,852

DEVICE FOR CONDITIONING AND PRESERVING IN VACUO PLASTIC-WRAPPED STERILIZED PRODUCTS, NOTABLY LINEN, IN AN AUTOCLAVE

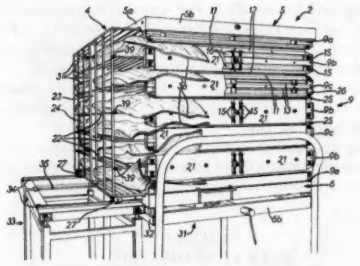
Maurice Orliaguet, Sucy en Brie, and Christian F. Colas, Neuilly sur Seine, both of France, assignors to M A J, Societe a Responsabilite Limitee, Pantin, France

Filed Mar. 9, 1979, Ser. No. 19,085

Claims priority, application France, Mar. 13, 1978, 78 07107

Int. Cl.[3] **B65B** *31/02, 55/06*

U.S. Cl. 53—89 **8 Claims**



1. In a device for packing and preserving sterilized products under vacuum in plastic packs, in particular linen, in an autoclave, comprising at least one support-rack, a plurality of parallel bars supported by said support-rack forming a structure adapted to receive a plurality of packs in the form of air-impervious plastic bags open at one end, means for supporting said packs in said support-rack in such a manner that the open end of each pack extends between two adjacent bars of said plurality of parallel bars, and members mounted on said parallel bars for compressing and sealing the open ends of said packs, said compressing members being movably mounted on said parallel bars between inoperative and operative positions, the improvement wherein:

(a) said parallel bars are rigidly secured to said support-rack so as to form slots of predetermined width open at at least one end between adjacent compressing and sealing members; and

(b) said pack supporting means comprises at least one auxiliary parallelipipedical rack which can be introduced into and removed from said main support-rack in a direction parallel to the longitudinal direction of said slots on the side of the open ends thereof.

(c) said compressing members are movably mounted on said parallel bars between inoperative and operative positions.

4,242,853

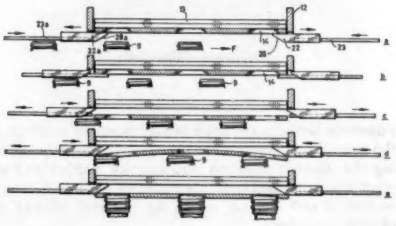
METHOD AND APPARATUS FOR ARRANGING A CARRIER MAT ON A NUMBER OF CONTAINERS

Johannes A. Roetgerink, Hengelo, Netherlands, assignor to B.V. Machinefabriek M. Brouwer & Co., Hengelo, Netherlands

Filed Jan. 16, 1979, Ser. No. 3,801

Int. Cl.[3] **B65B** *21/00*

U.S. Cl. 53—398 **11 Claims**



1. A method for applying a carrier mat on a plurality of moving ranged containers, said carrier mat having a corresponding plurality of apertures for receiving the tops of said plurality of said ranged containers, comprising the steps of:

(a) conveying said plurality of ranged containers under a carrier mat delivery device;

(b) positioning said carrier mat in said delivery device for dropping onto said containers as said containers are conveyed past said delivery device;

(c) dropping said carrier mat from said delivery device so that portions of said carrier mat other than said plurality of apertures rest on the tops of said containers;

(d) holding said carrier mat in pressure abutment against said tops of the containers after dropping of said carrier mat while said containers continue to move in relation to said carrier mat;

(e) releasing said mat when said apertures of said mat coincide with the tops of said containers, whereby said mat drops to rest in position wherein said tops of said containers extend through said apertures; and

(f) pressing said carrier mat into pressure engagement with the top portions of said containers.

4,242,854

AUTOMATIC BAG LOADER

Walter D. Nissen, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 23, 1979, Ser. No. 59,665

Int. Cl.[3] **A65B** *63/02;* **B65B** *35/56*

U.S. Cl. 53—529 **6 Claims**

1. A bagging system for bagging a stack of a compressible

material into a plastic bag, wherein a material supply source supplies each stack of compressible material systematically and in consecutive order to said bagging system, wherein said stack of compressible material comprises a plurality of sheets of compressible material that are folded in half and stacked with the folded edges oriented in the same direction, said system comprising:

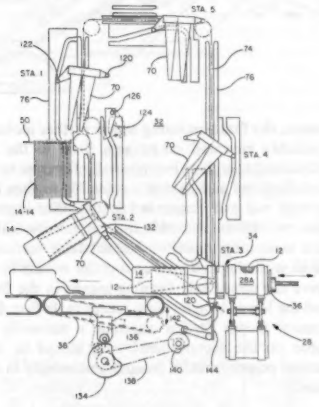
(a) an input station for receiving each stack of compressible material with the folded edge of each sheet oriented in a first direction, in line with the direction of travel of the stack from said supply source to said input station;

(b) a transfer station spaced from said input station for receiving each stack of compressible material with the folded edge of each sheet oriented in a second direction, 180° from the first direction;

(c) orienting means disposed between said input station and transfer station for moving each stack from said input station to said transfer station in a manner causing said stack to be compressed gradually from a free-standing height to a chosen compressed height while causing the folded edge of each sheet in said stack to be oriented in said second direction;

(d) a bag loading station spaced from said transfer station for bagging each stack of compressed material;

(e) a bucket conveyor means disposed between said transfer



station and said bag loading station for transferring in consecutive order each compressed stack from said transfer station to said bag loading station;

(f) means for loading each stack of said compressed material into a bucket of said bucket conveyor.

(g) bag supply means for providing a continuous supply of vertically suspended bags;

(h) means for partially opening each vertically suspended bag supplied by said bag supply means, said means for partially opening each vertically suspended bag comprising (1) separating means for separating a first edge of each bag from a second edge at a lip of said bag, and (2) a retaining means for grasping and holding the first edge separated from the second edge;

(i) means for fully opening said bag to form a box-shaped bag having a tension stressed surface and positioning said fully opened box-shaped bag at said bag loading station in a manner to receive said compressed stack of folded material;

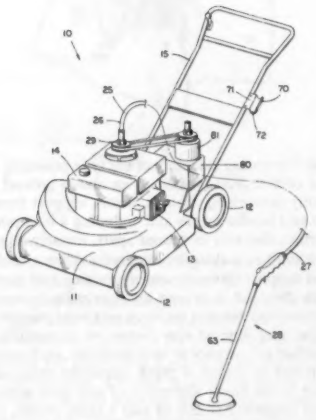
(j) bag loading means for transferring each stack of compressed material into the fully opened bags with the folded edge of each sheet of compressed material located at the opened end of said bag including (1) means for transferring each compressed stack of material in consecutive order from each bucket of said bucket conveyor into each opened bag supplied by the fully opened bag positioning means to form a package and simultaneously separating the package from the fully opened bag positioning means, (2) means for transferring the separated package to a twist-tie station, and (3) means for twist-tying the open end of the package at the twist-tie station.

4,242,855

LAWN MOWER AUXILIARY UNIT WITH FLEXIBLE DRIVE SHAFT

B. Max Beaver, Jr., 3145 Merrick La., #2B, Indianapolis, Ind. 46222

Filed Feb. 22, 1979, Ser. No. 13,883
Int. Cl.³ A01D *35/26*
U.S. Cl. 56—13.7 **5 Claims**



5. A rotary lawn mower with auxiliary unit comprising:

a lawn mower main frame with wheels to move across a lawn;

an engine mounted on said frame having a rotatable drive means with a top end extending upwardly from said engine and a bottom end extending downwardly beneath said engine;

a cutting head mounted to said bottom end and being rotatable therewith about an axis of rotation perpendicular to a cutting plane with said cutting head including cutting elements extending outwardly therefrom in said plane for cutting vegetation beneath said main frame;

an auxiliary frame sized to be moved away from said main frame with said auxiliary frame having an output means of power and a rotatable input driver;

a flexible shaft with one end connected to said top end and an opposite end connected to said driver, said shaft being rotatable by said drive means of said engine to rotate said driver;

a rigid extension mounted to said opposite end of said flexible shaft and mountingly received by said driver;

clutch means on said auxiliary frame operable to connect and disconnect said output means of power to said flexible shaft;

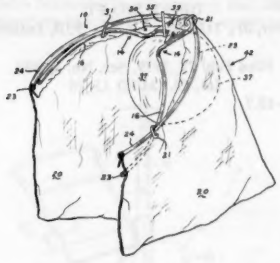
a flexible nonrotatable housing in which said flexible shaft rotates and extends from said one end to said opposite end of said flexible shaft and wherein said rotatable drive means is a crankshaft of said engine;

an adaptor removably connecting said one end of said flexible shaft to said rotatable drive means, said adaptor including a main body with an internally threaded end portion removably threaded onto said top end of said rotatable drive means and an opposite end releaseably connected to said one end of said flexible shaft.

4,242,856
FRUIT HARVESTING ASSEMBLY

Franklin C. Patton, 3918 97th Ave. N., Pinellas Park, Fla. 33565

Filed Jun. 22, 1979, Ser. No. 51,037
Int. Cl.[3] A01D *46/24*
U.S. Cl. 56—339 7 Claims



1. A fruit harvesting assembly of the type primarily designed to cut and collect fruit located at an above ground position, said assembly comprising: handle means, support frame means secured to said handle means and including a base portion and a head portion disposed in spaced apart, linearly aligned relation to one another and to the longitudinal axis of said handle means, said support frame means comprising two support arm means each disposed in spaced apart relation to one another and interconnected relation between said head portion and said base portion, said support arm means are cooperatively positioned to define an entrance to said assembly, each support arm means disposed to define a plane angularly oriented to one another and to the linear alignment of said base portion, head portion and longitudinal axis of said handle means, each said support arm means includes an arcuately, substantially outwardly bowed, curvilinear relation to one another so as to define said entrance to said assembly through which fruit passes after being cut; cutting means secured to said head portion and disposed in predetermined angular orientation to the linear alignment of said head portion, base portion and longitudinal axis of said handle means, said cutting means comprises a blade element disposed in an angular depending relation to said linear alignment of said base portion, head portion and the longitudinal axis of said handle means, each support arm means angularly oriented in depending declined relation to said linear alignment and said blade element, said angular oriented cutting means disposable in a cutting position substantially defined by a transverse relation to the stem of the fruit being cut while said linear aligned head portion and base portion are depending therefrom in declined relation to the cutting plane of said cutting means, whereby a clear view of the fruit being cut is available to the operator of said assembly.

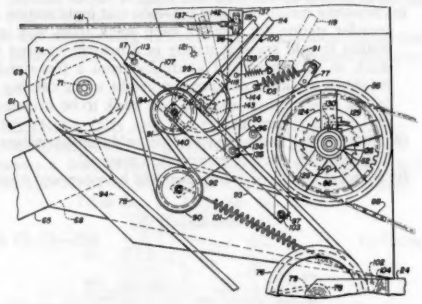
4,242,857
OVERRIDE MEANS FOR AUTOMATIC BALE EJECTION DRIVE

Charles A. Parrish, and Richard E. Jennings, both of New Holland, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Mar. 29, 1979, Ser. No. 25,172
Int. Cl.[3] A01F *15/00*
U.S. Cl. 56—341 15 Claims

1. In a crop roll forming machine having a pickup mounted to a mobile frame, a tailgate movable in an arcuate path of travel between a first point and a second point, an upper bale forming means reversibly movable in a first direction and an opposing second direction, a lower bale forming means movable in at least a first direction of travel, a roll forming region defined generally by the upper and lower bale forming means, drive means connectable to the bale forming means effective to automatically reverse the movement of the upper bale forming means when the tailgate is elevated beyond a predetermined point in its arcuate path of travel and to concurrently stop the travel of the lower bale forming means, the drive means further having a first power transfer means and a second power transfer means, the second power transfer means being movable between at least a first position and a second position, and first tensioning means cooperative with the first power transfer means and second tensioning means cooperative with the second power transfer means, the improvement comprising:

an overcenter pivotal and selectively actuatable control means cooperative with the drive means and connected thereto such that when actuated the control means pivots downwardly and forwardly to contact the first tensioning



means, the first tensioning means further including an idler rotatably mounted on an arm fixed to the tailgate and connected to a pivot link pivotally fastened to the machine on a first end and having a rotatable surface affixed to its second end and connected to the idler intermediate the first end and the rotatable surface thereby maintaining the first tensioning means via the rotatable surface in engagement with the first power transfer means to continue to drive the upper bale forming means in the first direction and the lower bale forming means in its first direction, the control means further exerting a generally downward force on the second tensioning means to maintain the second power transfer means substantially in its first position.

4,242,858
OPEN-END SPINNING DEVICE

Yuan-Heng Dschen, Baden, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 6, 1978, Ser. No. 939,955
Claims priority, application Switzerland, Sep. 15, 1977, 11286/77
Int. Cl.[3] D01H *1/135*
U.S. Cl. 57—58.89 9 Claims

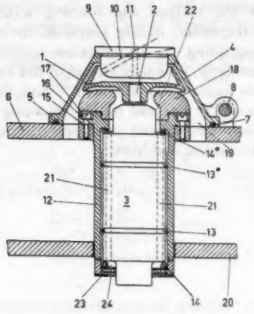
1. An open-end spinning device, comprising:

a spinning rotor having a frustoconical shape;

a toroidal intermediate member arranged closely beneath the spinning rotor;

a spinning compartment housing, the spinning rotor being closely received within the spinning compartment housing with the spinning compartment housing, the spinning rotor and the toriodal intermediate member together defining a first flow path extending between the frustoconical spinning rotor and the spinning compartment housing in a direction of increasing radius of the spinning

rotor and then between a radial outer surface of the toroidal intermediate member and the spinning compartment



housing, and with a pressure differential being provided across the first flow path during rotation of the rotor; and means for rotating the spinning rotor.

4,242,859

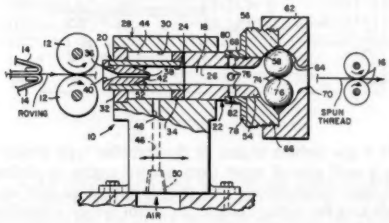
THREAD SPINNING APPARATUS

William E. Lundgren, Northborough, Mass., assignor to Lawrence M. Keeler, Whitinsville, Mass.

Filed Jan. 21, 1980, Ser. No. 113,972

Int. Cl.³ D01H *7/882, 1/12*

U.S. Cl. 57—58.89 **22 Claims**



1. Apparatus for direct spinning comprising a spinning unit to which staple fibers are supplied and from which a spun thread is withdrawn, said spinning unit defining an elongate, cylindrical chamber of uniform diameter, means for delivering air to the chamber in a forwardly moving vortex, means for delivering staple fibers into a vortex within the chamber, said vortex operating to disperse the fibers as they are delivered into the chamber and reform them into an embryo thread free or false twists, means at the end of the chamber for rotating the embryonic thread as it is withdrawn in the direction of rotation of the vortex to impart a true twist thereto, said means defining an annular raceway at said end of the tubular chamber concentric therewith and means arranged in said annular raceway to be rotated about the axis of the tubular chamber by impingement of the vortex of air moving forwardly through the tubular chamber, said means when rotating within the raceway presenting friction-engendering means turning about the axis of the thread generated within the chamber in the direction of rotation of the vortex.

4,242,860

YARN MONITORING APPARATUS FOR AN OPEN END SPINNING TURBINE

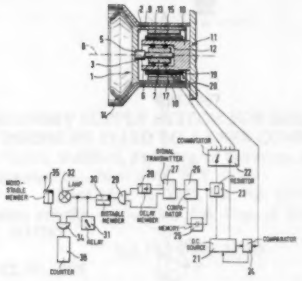
Heinz Wehde, Rothenberg; Burkhard Wulfhorst, and Fritz Schumann, both of Ingolstadt, all of Fed. Rep. of Germany, assignors to Teldix GmbH, Heidelberg, Fed. Rep. of Germany

Filed Dec. 14, 1978, Ser. No. 972,713

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755647

Int. Cl.³ D01H *13/16, 13/18;* G08B *21/00*

U.S. Cl. 57—81 **8 Claims**



1. In an apparatus for monitoring the yarn delivered by an open end spinning turbine including an electric motor for driving the open end spinning turbine with a predetermined rpm; the apparatus including a measured value transmitting means responsive to changes in the current consumption of the electric motor for generating a signal when the change in the current consumption exceeds a predetermined threshhold value; the improvement wherein said measured value transmitting means includes sensing means responsive to a reduction in the current consumption of said electric motor and signal generating means operatively connected to said sensing means for generating a yarn breakage indicating signal when the reduction in the current consumption of said electric motor falls below a predetermined value indicative of yarn breakage.

4,242,861

YARN TWISTER RING LUBRICANT

J. Frank Kirksey, Thomaston, Ga., assignor to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 927,796, Jul. 25, 1978, abandoned. This application Feb. 19, 1980, Ser. No. 122,107

Int. Cl.³ D01H *7/62;* C10M *5/08, 7/12;* C10L *1/16*

U.S. Cl. 57—120 **3 Claims**

1. In a method for twisting yarn by passing the yarn through the eye of a nylon traveler turning on a twister ring to twist the yarn and feed it onto a rotating bobbin, wherein the surface of the twister ring is lubricated with a lubricant comprising a mixture of a lubricating oil and a paraffin wax, the improvement comprising lubricating the surface of the twister ring in contact with the traveler with a solid lubricant consisting essentially of a minor amount of the lubricating oil having an SUS viscosity at 20° C. in the range of 30–600 selected from the group consisting of hydrorefined naphthenic petroleum oil, hydrorefined paraffinic petroleum oil, solvent refined paraffinic petroleum oil, hydrogenated polyolefin oil, and mixtures thereof and a major amount of the paraffin wax whereby the friction between the traveler and the twister ring is reduced.

4,242,862

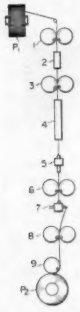
MULTIFILAMENT YARN HAVING NOVEL CONFIGURATION AND A METHOD FOR PRODUCING THE SAME

Takao Negishi, and Kazuo Tomiita, both of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 639,873, Dec. 11, 1975, Pat. No. 4,059,950. This application Aug. 30, 1977, Ser. No. 829,192

Int. Cl.³ D02G *1/02*; D02J *1/22*

U.S. Cl. 57—287 **17 Claims**



1. Method of producing a polyester yarn composed of a plurality of individual fibrous materials, each of said fibrous materials provided with thicker cross-sectional portions, thinner cross sectional portions and intermediate thickness-size portions randomly distributed along the axial direction thereof, comprising drawing undrawn multifilament yarn under a condition of a drawing ratio below a natural draw ratio of undrawn filaments of said undrawn multifilament yarn and a drawing temperature of said yarn over a crystalizing initiating temperature of said undrawn filaments.

3. Method of producing a polyester yarn according to claim 1, further comprising a step of twisting said undrawn multifilament yarn before applying said drawing operation, and imparting twists less than $250/\sqrt{\text{Total thickness of yarn in denier}}$ Turns/meter to said undrawn multifilament yarn in said twisting operation.

4,242,863

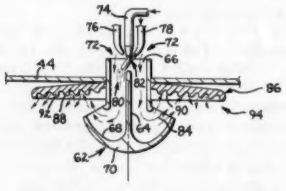
DUAL PHASE FUEL VAPORIZING COMBUSTOR

John M. Bailey, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 16, 1978, Ser. No. 887,149

Int. Cl.² F02C *7/22*

U.S. Cl. 60—39.06 **25 Claims**



1. A method of burning heavy and highly carbonaceous portions of fuel in a gas driven turbine, comprising, introducing fuel and air in an appropriate air-fuel ratio mixture into a vaporizing combustor of a gas driven turbine during a continuing operational phase thereof and subjecting the mixture to heat for at least partial vaporization of the fuel, impinging the partially vaporized mixture against a hot surface, with liquid fuel remaining in the partially vaporized mixture being deposited in a thin film on the hot surface with the more volatile portions of the so deposited liquid fuel thereupon vaporizing and burning, the heavier portions of the so deposited liquid fuel remaining on the surface and forming a carbon deposit thereon, and thereafter, during sustained turbine operation, selectively controlling, by a continuous cyclic reduction or cessation of fuel flow, flowing a stream of hot air with little or no fuel therein against the hot surface and the hot carbon deposits thereon, the hot and highly oxidizing air in the so selectively controlled fuel and air stream causing the hot carbon deposits to oxidize and burn.

4,242,864

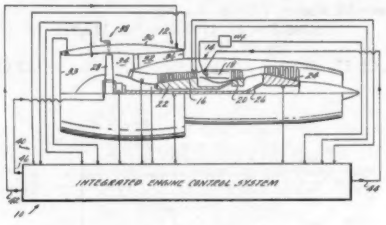
INTEGRATED CONTROL SYSTEM FOR A GAS TURBINE ENGINE

Jack E. Cornett; Andrew A. Saunders, Jr., both of Cincinnati; Ira E. Marvin, Fairfield, and Richard S. Beitler, Cincinnati, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 741,056, Nov. 11, 1976, abandoned. This application May 25, 1978, Ser. No. 909,608

Int. Cl.³ F02K *3/06*

U.S. Cl. 60—226 R **29 Claims**



1. In a gas turbine engine of the turbofan type which includes a wall spaced apart from a core engine to define a bypass duct therebetween, said duct including an inlet and a variable area fan exhaust nozzle, a control system comprising:

means for generating a signal representative of the actual inlet throat Mach number;

means for generating an inlet throat Mach number reference signal;

means for comparing said signals to generate a difference signal;

actuator means responsive to said difference signal for modifying said fan exhaust nozzle area;

means for generating a signal representative of the actual engine thrust;

means for generating a signal representative of the engine power setting;

means for modifying said power setting signal in response to existing operating conditions to create a thrust demand signal;

means for comparing said actual thrust signal with said thrust demand signal to generate a thrust difference signal; and

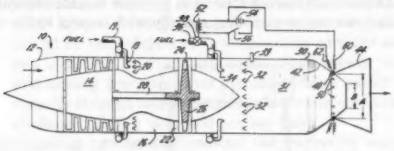
actuator means responsive to said thrust difference signal for modifying engine fuel flow.

4,242,865

TURBOJET AFTERBURNER ENGINE WITH TWO-POSITION EXHAUST NOZZLE

Emmett S. Harrison, Corona, N.Y., and Anthony Leto, Franklin Lakes, N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Jan. 25, 1978, Ser. No. 872,249
Int. Cl.[2] F02K *1/24, 3/10*
U.S. Cl. 60—242 5 Claims



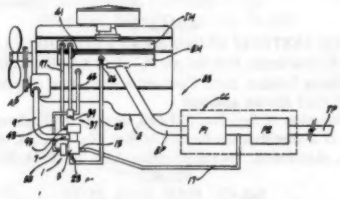
1. A turbojet engine for aircraft missiles including an afterburner, an exhaust nozzle duct disposed downstream of said afterburner for discharge of the engine exhaust therethrough and having a non-variable throat portion of convergent-divergent profile, an element secured to and within said nozzle duct at its said throat portion and coacting with said throat portion to provide a non-variable reduced cross-sectional flow area nozzle for non-afterburning operation of the engine, and means operative during flight to jettison said element when the engine afterburner is activated so that the effective cross-sectional flow area is defined by the throat portion.

4,242,866

BY-PASS VALVE

Raymond E. Williamson, Granite City, Ill., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Nov. 13, 1978, Ser. No. 960,059
Int. Cl.[3] F01N *3/15*
U.S. Cl. 60—290 8 Claims



1. An improved by-pass valve for use in the exhaust system of an automobile engine, the exhaust system having a catalytic converter and the engine having an air pump, the by-pass valve comprising:

an air inlet connected to the air pump;

first and second air outlets respectively connected to first and second portions of the catalytic converter;

a third outlet through which air from the inlet is dumped to the atmosphere;

means responsive to the operating temperature of the engine for directing air from the inlet to the first outlet when engine temperature is less than a predetermined value and from the inlet to the second outlet when engine temperature reaches the predetermined value;

a first and normally closed valve intermediate the air inlet and the first and second outlets;

a second and normally open valve intermediate the air inlet and the third outlet; and

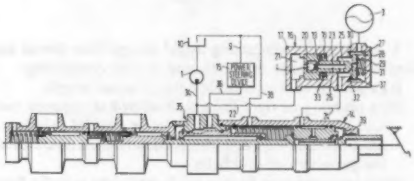
means responsive to the engine vacuum level for opening the first valve and closing the second valve when engine vacuum exceeds a predetermined level whereby air flows from the inlet to either of the first and second outlets, the vacuum responsive means including means responsive to a blockage of whichever of the first or second outlets air from the inlet is directed to for reopening the second valve whereby air from the inlet is dumped to the atmosphere, the blockage responsive means comprising a split shaft having a first section with which the first valve is integrally connected and a second section with which the second valve is integrally connected, the first and second shaft sections being movable in unison to open the first valve, but the second shaft section being movable relative to the first shaft section when said blockage occurs thereby to reopen the second valve.

4,242,867

STANDBY SUPPLY SYSTEM FOR DELIVERING PRESSURE FLUID TO A USER COMPONENT

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,951
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1978, 2814163
Int. Cl.[3] F16K *11/03*
U.S. Cl. 60—405 6 Claims



1. A standby supply system for delivering pressure fluid to a user component comprising:

a primary fluid source;

a first check valve coupling the pressure fluid of said primary source to said user component;

an accumulator;

a second check valve coupling the pressure fluid of said primary source to said accumulator for charging thereof; and

a valve arrangement coupled to said primary source, said accumulator and said user component, said valve arrangement being responsive to pressure from said primary source to control a connection from said accumulator to said user component;

said valve arrangement including

a housing having a longitudinal stepped bore accommodating a stepped piston slideable therein in an axial direction, an inlet chamber coupled to said primary source and an outlet chamber coupled to said user component, said piston having a front surface on its larger diameter portion exposed to pressure from said primary source in said inlet chamber and its smaller diameter portion projecting into said outlet chamber to control a passageway connecting said outlet chamber to said accumulator,

the end of said passageway adjacent said outlet chamber being a valve seat and the end of said smaller diameter portion being a closing member for said valve seat,

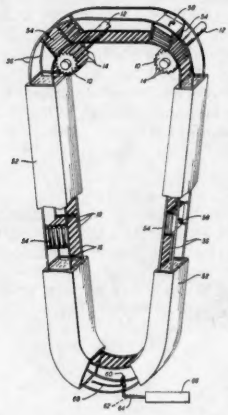
said inlet chamber being coupled to said outlet chamber by said first check valve, and

said outlet chamber being coupled to said accumulator by said second check valve, said piston being biased in a direction to open said passageway.

4,242,868
HYDRO-POWER GENERATION SYSTEMS

Charles E. Smith, 7932 Eisenhower Blvd., Bridgeport, N.Y. 13030

Filed Aug. 15, 1978, Ser. No. 933,819
Int. Cl.³ F03B 9/00; F03G 7/00
U.S. Cl. 60—496 **4 Claims**



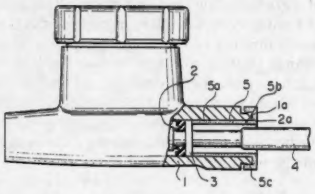
1. A system for generating useful energy from forces associated with a quantity of water, said system comprising:
(a) a pair of endless flexible belts of equal length;
(b) a plurality of rigid links each affixed at opposite ends to said belts to maintain the latter in parallel relation, said links being spaced at equal, predetermined intervals about the periphery of said belts;
(c) at least one gear having teeth extending radially from its periphery, the pitch of said teeth being equal to said predetermined intervals, said links being in meshed engagement with said teeth;
(d) a power shaft connected to said gear for rotation thereby;
(e) a plurality of inflatable and deflatable bellows fixedly attached in spaced relation to at least one of said belts and links in driving engagement and movable in a path producing movement of said belts, and thereby rotation of said gear and shaft, in a single direction;
(f) a U-shaped conduit defining two substantially parallel, vertical legs, open at the top, and a connecting lower portion, at least a substantial portion of said path being enclosed within said conduit;
(g) means for deflating said bellows when positioned in one of said legs and for inflating said bellows when positioned in the other of said legs; and
(h) a quantity of water contained by said conduit and exerting a buoyant force upon said bellows when positioned in said other leg to apply thereto a force sufficient to move said bellows, and thereby said belts, in said single direction.

4,242,869
MASTER CYLINDER

Takeshi Sakazume, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Division of Ser. No. 904,918, May 3, 1978, Pat. No. 4,198,825, which is a continuation of Ser. No. 743,215, Nov. 18, 1976, abandoned. This application Aug. 22, 1979, Ser. No. 68,956
Int. Cl.³ B60T 7/02
U.S. Cl. 60—594 **6 Claims**

1. A master cylinder for use in a vehicle braking system, said master cylinder comprising:
a main body formed of a single integral rigid member and having therein a bore with an open end, said bore having a uniform diameter;
a piston slidably positioned within said bore, said piston being permanently maintained in sliding contact with the inner surface of said bore;
an elongated hollow cylindrical sleeve extending into said bore through said open end thereof, said sleeve having an outer peripheral surface contacting the inner surface of said bore, said sleeve having a first axial end adjacent said piston and a second axial end adjacent said open end of said main body;
said main body having formed in an outer surface thereof at least one recess extending radially with respect to the axis

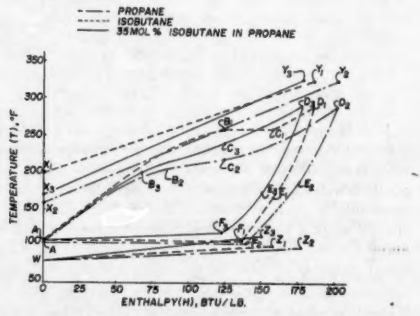


of said bore, said sleeve having at least one integral projection projecting radially with respect to said axis of said bore, said at least one projection snappingly fitting into said at least one recess, thereby retaining said sleeve in said bore;
an inner end face of said first end of said sleeve abutting against said piston to maintain said piston within said bore; and
said sleeve having a cylindrical wall having therein at least one slot extending from said second end axially toward said first end of said sleeve, said slot extending entirely through at least one portion of said cylindrical wall of said sleeve, said axially extending slot being adapted for the receipt of a brake actuating lever.

4,242,870
POWER SYSTEMS USING HEAT FROM HOT LIQUID

Judson S. Searingen, 500 Bel Air Rd., Los Angeles, Calif. 90024, and Sham Sunder, 2235 Carmelina Ave., Los Angeles, Calif. 90064 (last known address)

Continuation of Ser. No. 321,810, Jan. 8, 1973, abandoned, which is a continuation-in-part of Ser. No. 174,774, Aug. 25, 1971, abandoned. This application Aug. 29, 1974, Ser. No. 501,838
Int. Cl.³ F01K 25/06, 25/10
U.S. Cl. 60—651 **12 Claims**



1. In a process for converting thermal energy to mechanical energy wherein a working fluid is pre-heated and vaporized by being passed through a heating zone in countercurrent heat exchange relation with a heating fluid, said working fluid is expanded to produce mechanical energy, and said working

fluid is cooled and condensed, the improvement comprising:

using as said working fluid a mixture of ingredient fluids having moderately close but essentially different boiling points such that said working fluid vaporizes over a desired range of substantially continuously increasing vaporization temperatures, wherein for a substantial increase in enthalpy of said working fluid as it passes through said heating zone there is a substantial increase in temperature of said working fluid, and the differences in temperature between said working fluid and said heating fluid at each point in said heating zone are more nearly equal than would be the differences in temperature between any of said ingredient fluids and said heating fluid at each point in said heating zone were said ingredient fluids passed individually through said heating zone in counter-current heat exchange relation with said heating fluid;

maintaining substantially constant the respective compositions of said working fluid and said heating fluid throughout said heating zone;

and further maintaining said heating fluid in substantially a single phase throughout said heating zone.

4,242,871

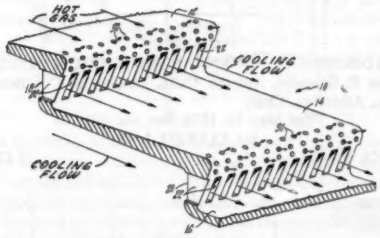
LOUVER BURNER LINER

Robert A. Breton, Old Saybrook, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 18, 1979, Ser. No. 76,639

Int. Cl.³ F02C 7/22

U.S. Cl. 60—757 **4 Claims**



1. A burner liner for a combustor for a gas turbine power plant having wall means defining a chamber in which combustion takes place, said wall means having substantially step like portions including an upper portion and a lower portion and a substantially vertical portion therebetween, a plurality of spaced vertical slots, the space therebetween being sized to allow a portion of the cooling air flowing over the upper and lower portions to pass therethrough and forming a film of cooling air to pass adjacent one of said portions in the combustion side of said wall means, a plurality of drilled holes adjacent said slots and at the bent portion formed at the juncture point of said upper portion and said vertical portion also admitting cooling air and the thickness therebetween of said wall means being selected to control the temperature gradient across said vertical portion.

4,242,872

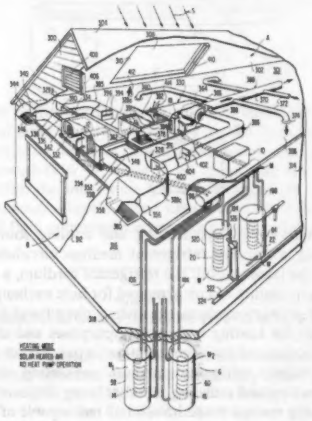
ATTIC MOUNTED SOLAR ASSIST MULTI-SOURCE/SINK RESIDENTIAL HEAT PUMP SYSTEM

David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Continuation-in-part of Ser. No. 950,905, Oct. 12, 1978, which is a continuation-in-part of Ser. No. 924,015, Jul. 11, 1978, which is a continuation-in-part of Ser. No. 882,729, Mar. 2, 1978, which is a continuation-in-part of Ser. No. 806,407, Jun. 14, 1977, Pat. No. 4,148,436, which is a continuation-in-part of Ser. No. 782,675, Mar. 30, 1977, Pat. No. 4,086,072, which is a continuation-in-part of Ser. No. 653,586, Jan. 29, 1976, Pat. No. 4,058,988. This application Dec. 18, 1978, Ser. No. 970,789

Int. Cl.³ F24J 3/02; F25B 27/00

U.S. Cl. 62—2 **10 Claims**



1. A heat pump refrigeration system for conditioning a residential building space or the like, said building comprising an attic thermally isolated from the space to be conditioned, said attic including a solar window facing a solar radiation source such that said attic defines a passive solar collector and forms a solar space, said refrigeration system comprising:

a first heat exchange coil;

a second heat exchange coil,

said coils trading functions as evaporator or condenser to absorb heat and discharge heat, respectively;

a compressor;

conduit means carrying refrigerant and defining a closed refrigeration loop circuit including said coils and said compressor and further comprising means for selectively operating said first and second heat exchange coils as evaporator or condenser as required, the improvement comprising:

a first duct within said attic, said first duct housing said first coil and having an inlet and an outlet;

a second duct within said attic and thermally isolated from said first duct, said second duct housing said second coil and having an inlet and an outlet;

blower means for forcing air flow through said ducts;

means for selectively communicating said first duct inlet and outlet to the building exterior or to said attic solar space;

said second duct outlet opening into the building space to be conditioned; and

means for communicating said second duct inlet to at least said space to be conditioned,

whereby said first coil functions to pick up heat from said solar space or from said outside when functioning as system evaporator or to discharge heat to the outside when functioning as system condenser, and said second coil functions to heat or cool the space to be conditioned

when functioning as condenser and evaporator, respectively.

4,242,873

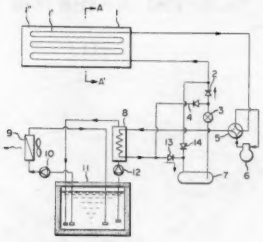
HEAT PUMP TYPE HEATING AND COOLING SOURCE SYSTEM

Toshiyuki Hino, Tokyo, Japan, assignor to Kajima Kensetsu Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 812,314, Jul. 1, 1977, abandoned. This application Jun. 22, 1979, Ser. No. 51,030

Int. Cl.[3] **F25B** *27/00, 27/02, 13/00*

U.S. Cl. 62—2 **5 Claims**



1. A heat pump type heating and cooling source system comprising a primary refrigerant medium circulating circuit utilizing the latent heat of the refrigerant medium, a secondary medium circulating circuit arranged for heat exchange relation with said primary medium circulating circuit and including a utility unit for heating and cooling purposes and at least one heat collecting and radiating member in panel form connected in said primary refrigerant medium circulating circuit, said heat collecting and radiating member being disposed outdoors substantially normal to the horizontal and capable of absorbing heat through solar radiation and from the atmosphere and capable of discharging heat to the atmosphere, the said primary refrigerant medium circulating in said system for winter heating purposes in the said member at an evaporating temperature of from about −10° C. to 20° C. when the cold ambient air is above −10° C. whereby said primary refrigerating medium absorbs solar radiation and heat from the atmosphere and the said primary refrigerant medium circulating in said system for summer cooling purposes at a condensing temperature of from 30° C. to 60° C. when the air temperature is up to about 30° C. whereby said primary refrigerating medium discharges heat through said member to the atmosphere, the said primary refrigerant medium constituting essentially the sole fluid means in the system for absorbing heat from and releasing heat to the outdoors.

4,242,874

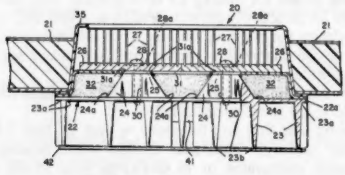
ICEBOX CONVERSION UNIT

Larry L. Simms, P.O. Box 1083, San Pedro, Calif. 90733

Filed Dec. 11, 1978, Ser. No. 968,502

Int. Cl.[3] **F25B** *21/02;* **F25D** *3/08*

U.S. Cl. 62—3 **4 Claims**



1. A thermoelectric refrigeration unit adapted for installation in an existing thermally insulated enclosure having an opening therein comprising:

a cold plate adapted to be secured to said enclosure in the opening, said cold plate having heat absorbing fins on one side thereof and facing inwardly of said enclosure, and means defining at least one boss on the other side thereof facing outwardly of said enclosure, said heat absorbing fins radially extending outwardly from a generally central space;

a fan mounted on said cold plate within the central space;

a baffle plate secured to said heat absorbing fins and having louvers therein generally positioned over said fan, whereby said fan moves air from said enclosure, past said heat absorbing fins and out through said louvers back into said enclosure;

a heat sink plate with heat radiating fins on one side thereof facing outwardly of said enclosure;

means defining at least one thermoelectric module disposed between said plates and cemented to said heat sink plate with a thermally conductive epoxy cement, and module means being thermally joined to said boss means with a thin continuous film of a thermally conductive grease;

a plurality of screws extending from said heat sink plate to said cold plate and compressing said module therebetween, said screws extending through thermally insulating washers, clearance holes in said heat sink plate, relief grooves in the sides of said boss means, and being threaded into said cold plate;

a pour-in-place polyurethane foam thermal insulation material disposed between said plates to substantially completely fill the space therebetween;

a dished separator disposed substantially to enclose the space between said plates, said separator having a flange secured to the edge of said cold plate, said separator extending to cover said insulation material and pass beneath said heat sink plate, said separator having an opening to accommodate said module;

a second fan mounted on said dished separator adjacent said heat radiating fins of said heat sink plate; and

a cover nesting over said dished separator and enclosing said second fan, said heat sink plate and said heat radiating fins, said cover having a flange secured to said separator flange and opening over said second fan and said heat radiating fins to permit circulation of air therethrough.

4,242,875

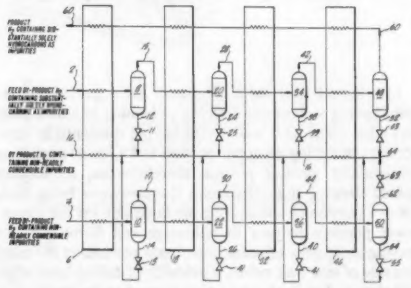
HYDROGEN CRYOGENIC PURIFICATION SYSTEM

Arthur E. Schaefer, Arcadia, Calif., assignor to C F Braun & Co., Alhambra, Calif.

Filed May 10, 1978, Ser. No. 904,373

Int. Cl.[2] **F25J** *3/08*

U.S. Cl. 62—23 **21 Claims**



1. A process for the cryogenic purification of industrial by-product gas streams containing impure hydrogen in recoverable amounts, one of the by-product hydrogen gas streams also containing non-readily condensible impurities having

boiling points below that of methane, which comprises the steps of:

(a) passing a first and second hydrogen containing gas streams through a successive series of cooling and separation stages, the first gas stream containing hydrocarbons as substantially the sole impurities and the second gas stream containing nitrogen or other non-readily condensible impurities having boiling points below that of methane;

(b) separating at each such separation stage from the first and second hydrogen containing gas streams a purified gas stream overhead from a condensed bottom fraction, the purified overhead of the second gas stream also containing the non-readily condensible impurities, and combining the bottom fractions into one or more condensate streams;

(c) injecting the overhead containing the non-readily condensible impurities from the final separation stage into a condenstate stream containing combined bottom fractions; and

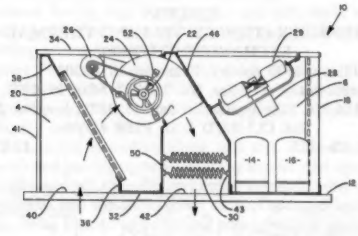
(d) recovering the overhead of the first stream as hydrogen product of desired purity.

4,242,876

ROOFTOP TYPE AIR CONDITIONER

Edward G. Cooper, Skaneateles; Richard D. Jeffers, North Syracuse, and David M. New, Homer, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 27, 1979, Ser. No. 24,357
Int. Cl.³ F25D *17/06*
U.S. Cl. 62—89 **7 Claims**



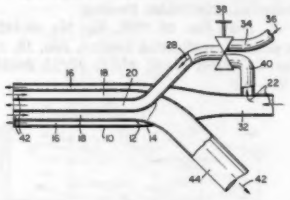
1. A rooftop type air conditioning unit with top, bottom and side walls having a dividing wall separating the unit into an indoor section and an outdoor section having a heat exchanger, an outdoor fan and a compressor, the indoor section having an intake opening in the bottom wall for the receipt of air from the area to be conditioned, an indoor air heat exchanger mounted between the top and bottom walls of the unit at an acute angle, such that entering air flows generally upward therethrough, a centrifugal fan and shroud mounted adjacent to the top wall of the unit on the opposite side of the heat exchanger from the intake such that indoor air may be drawn through the heat exchanger by the fan, said fan being spaced from the heat exchanger to promote efficient air flow therethrough, a discharge opening in the bottom wall of the unit such that air drawn into the fan is accelerated and discharged downwardly therefrom towards the discharge opening to provide a relatively obstacle free and direct air flow path through the indoor section of the unit, the major angular deflection of the air occurring within the fan shroud, and an internal wall which serves to support the centrifugal fan and shroud and which serves to separate air being drawn into the fan from air being discharged from the fan.

4,242,877

HEAT-EXCHANGER ELEMENT FOR A FREEZE DRIER

Friedhelm Geerkens, Schwalbenstr. 3, 4044 Kaarst, Fed. Rep. of Germany

Filed Mar. 8, 1978, Ser. No. 884,573
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 2709961
Int. Cl.³ F25D *17/06*
U.S. Cl. 62—93 **11 Claims**



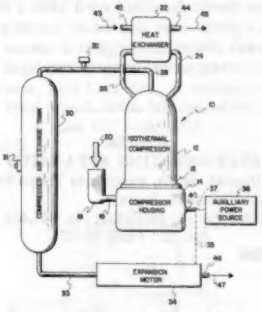
1. A heat exchanger element for cooling and drying a gas, said element comprising an outer tube for the through-flow of a freezing mixture, an inner tube disposed within the outer tube for the through-flow of a gas to be dried, and a core tube located within the inner tube for the through-flow of a first fluid component, wherein a feed tube for the through passage of a second fluid component is provided at an end of said core tube.

4,242,878

ISOTHERMAL COMPRESSOR APPARATUS AND METHOD

VerDon C. Brinkerhoff, Salt Lake City, Utah, assignor to Split Cycle Energy Systems, Inc., Salt Lake City, Utah

Filed Jan. 22, 1979, Ser. No. 5,415
Int. Cl.³ F25D *15/00*
U.S. Cl. 62—119 **14 Claims**



1. A compressor comprising:

a compression chamber defined by a thin-wall element having a hemispherical profile;

a piston operable in the compression chamber to compress a compressible gas;

valve means for admitting the compressible gas into the compression chamber;

conduit means for removing compressed gas from the compression chamber;

cooling means for cooling the compressible gas comprising an evaporation chamber disposed about at least a portion of the hemispherical profile of the compression chamber, the evaporation chamber containing a body of liquid having a predetermined heat of vaporization to accommodate removal of at least a portion of the thermal energy from the compressible gas wherein the thermal energy is

in the compressible gas resulting from compression of the compressible gas; and

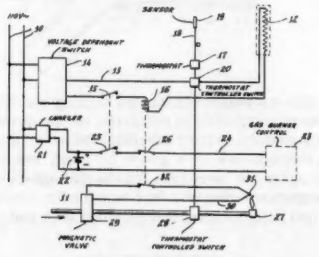
heat exchange means for removing the thermal energy from the evaporated liquid.

4,242,879

CONTROL SYSTEM FOR A REFRIGERATING APPARATUS OPERABLE ELECTRICALLY OR BY GAS

Peter E. Blomberg, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Jun. 18, 1979, Ser. No. 49,542
Claims priority, application Sweden, Jun. 19, 1978, 7806991
Int. Cl.³ F25B *15/00, 27/00, 27/02;* B60H *3/04*
U.S. Cl. 62—148 **5 Claims**



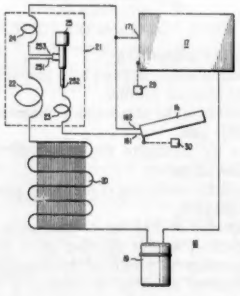
1. In a control system for an absorption refrigeration apparatus having an electric heating means, gas heating means, and a gas control means for controlling said gas burner means, said gas control means including an electric circuit for igniting and maintaining a flame in said burner means; the improvement wherein said control system further comprises an input for receiving electric supply current, a voltage-dependent switch circuit coupled to said electric heating means for applying electric current thereto from said input when a voltage at said input exceeds a given value, and means coupling the voltage-dependent switch circuit to said electric circuit for enabling said gas control means when voltage at said input is below said given value.

4,242,880

REFRIGERATING APPARATUS

Hideo Niida, Ibaraki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Nov. 1, 1977, Ser. No. 847,435
Int. Cl.³ F25B *39/02*
U.S. Cl. 62—200 **4 Claims**



1. In a refrigerating apparatus including a cabinet, a refrigerating food compartment and a frozen food compartment in said cabinet,

first and second doors movably secured to said cabinet for closing said compartments,

first and second evaporators comprising a refrigerant circuit for cooling each of said compartments,

an electric solenoid valve for controlling a refrigerant gas flowing to each of said evaporators, and

a controlling circuit for operating said refrigerant circuit,

wherein said controlling circuit comprises a second temperature-sensitive switch and a solenoid coil connected to said second temperature-sensitive switch for operating said valve, and wherein said refrigerant circuit further comprises:

a motor driven compressor,

a condenser connected to said compressor,

a first capillary tube connected at one end to said condenser,

said valve having one inlet and two outlets and operable in an open position to provide flow between said inlet and a first one of said outlets, and in a closed position to permit flow between said inlet and a second one of said outlets, and said inlet and said valve being connected to the other end of said first capillary tube,

a second capillary tube connected at one end to said first one of said outlets of said valve,

an inlet of said first evaporator connected to the other end of said second capillary tube for cooling said refrigeratory food compartment,

an inlet of said second evaporator connected to an outlet of said first evaporator for cooling said frozen food compartment, and

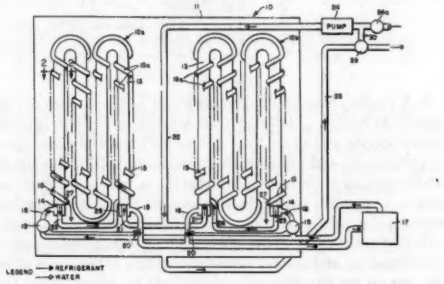
a third capillary tube connected at one end to said second outlet of said valve and at another end to said inlet of said second evaporator, whereby a refrigerant gas flows to said first evaporator when said valve is opened by the temperature in said refrigeratory food compartment.

4,242,881

REFRIGERATION SYSTEM AND THERMAL EXCHANGER THEREFOR

Alea Williams, 1930 Asbury, Evanston, Ill. 60201

Continuation-in-part of Ser. No. 780,777, Mar. 24, 1977, Pat. No. 4,144,718. This application Jan. 11, 1979, Ser. No. 2,619
Int. Cl.³ B67D *5/62;* F25B *41/04*
U.S. Cl. 62—225 **12 Claims**



1. A refrigerant-water thermal exchange assembly for cooling water for industrial use, said assembly comprising a coiled refrigerant tube having refrigerant inlet means at one end thereof for receiving refrigerant from a condenser and having refrigerant outlet means at the opposite end thereof for discharging the refrigerant to a compressor, a coaxial water tube disposed within said refrigerant tube, said coaxial water tube having an outside diameter substantially smaller than the inside diameter of said refrigerant tube and having water inlet means adjacent said refrigerant outlet means for receiving water to be cooled, said coaxial water tube also having water outlet means adjacent said refrigerant inlet means, and a helical water tube

coiled about said refrigerant tube along substantially the full length thereof, said helical water tube having water inlet means at one end thereof communicating directly with said outlet means of said coaxial water tube, said helical water tube also having water outlet means disposed at the opposite end thereof, each of said tubes being formed of a material of high thermal conductivity.

4,242,882

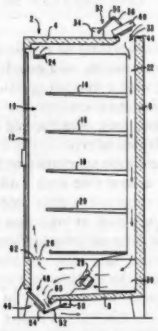
GLASS DOOR MERCHANDISER

Fayez F. Abraham, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 25,473, Mar. 30, 1979. This application Jul. 19, 1979, Ser. No. 58,916

Int. Cl.³ A47F *3/04*; F25D *21/10*

U.S. Cl. 62—256 **13 Claims**



1. A refrigerated display case comprising:

a cabinet having top, bottom, rear and side walls with an interior display space and an opening at its front for enabling access into said display space;

at least one door covering said front opening, said door being movable for enabling access through said front opening to products within said display space of said display case;

an air conduit extending along said top, bottom and rear walls and having an outlet opening and an inlet opening at opposing ends thereof, said outlet opening being located adjacent said top wall of said cabinet and said inlet opening being located adjacent said bottom wall of said display case and said outlet and inlet openings being arranged in alignment so that air leaving said outlet opening will be directed towards and received by said inlet opening so as to form an air curtain across said front opening along a path inside of said door;

an air band establishing means for establishing a flow of refrigerated air through said air conduit during a refrigeration cycle of operation so that air is expelled through said outlet opening and received through said inlet opening, said air band establishing means including refrigeration means and means for creating a positive pressure air flow through said refrigeration means; and

defrost means for defrosting said display case when said display case is operated in a defrost cycle of operation, said defrost means causes ambient air to flow in a reverse direction with respect to the direction of air flow during a refrigeration cycle of operation through a substantial portion of said air conduit, including that portion of said air conduit located along said rear wall of said cabinet of said display case, and passing such ambient air through said refrigeration means for defrosting said refrigeration means and causing most of such ambient air before it enters said display space to be expelled from said air conduit into the atmosphere surrounding said display case.

4,242,883

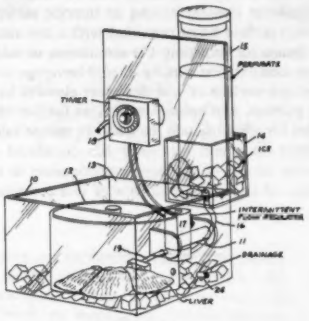
LIVER PRESERVATION

Luis H. Toledo-Pereyra, Grosse Pointe Farms, Mich., assignor to Henry Ford Hospital, Detroit, Mich.

Filed Apr. 2, 1979, Ser. No. 25,774

Int. Cl.³ B01F *3/04*

U.S. Cl. 62—306 **2 Claims**



1. An apparatus for perfusing livers comprising

a portable container,

a liver receptacle removably positioned in such container,

portions of said receptacle being spaced from the walls of said container when the receptacle is in position so that ice may be positioned around the receptacle,

a perfusate holder mounted on said container for containing perfusate at ambient pressure,

a second container surrounding a portion of said holder and adapted to receive ice,

an intermittently operated flow regulator for controlling flow of perfusate solely by gravity from said holder to said receptacle,

a timer for controlling operation of said controller,

said receptacle having an outlet.

4,242,884

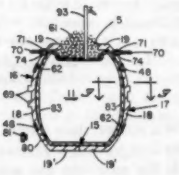
BEVERAGE COOLER

Rex R. Kotschwar, 2311 Lake Ave., Gothenburg, Nebr. 69138

Filed May 7, 1979, Ser. No. 36,945

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—371 **10 Claims**



1. An improved beverage cooler in the form of an insulating container, comprising:

a container element having insulating characteristics;

an enclosure cavity within said container element to envelope a beverage container;

an interior chamber within said container element for receiving a cooling medium such as ice;

a means for opening said container element to install said beverage container into said enclosure cavity; and

a means for securing said container element so that said beverage container is securely held within said enclosure cavity;

said beverage container having an exterior surface and said

interior chamber being provided within said container element above said enclosure cavity so that when said beverage container is installed in said enclosure cavity, and an amount of ice is received within said interior chamber, said ice will melt and transform into an amount of ice water, said ice water circulating by the force of gravity down said exterior surface of said beverage container;

said container element having an interior surface and said interior surface being provided with a circulation impeding means for impeding the circulation of said ice water down said exterior surface of said beverage container;

said interior surface of said container element having a bottom portion, said container element further comprising a means for allowing said ice water to escape said container element once said ice water has circulated down said exterior surface of said beverage container to said bottom portion of said interior surface of said container element.

4,242,885

APPARATUS FOR A REFRIGERATION CIRCUIT

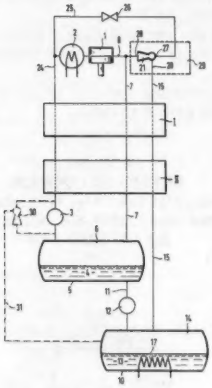
Hans Quack, Pfaffikon, and Armin E. Senn, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Dec. 18, 1978, Ser. No. 970,159

Claims priority, application Switzerland, Dec. 23, 1977, 15972/77

Int. Cl.³ F25B *1/06*

U.S. Cl. 62—500 **8 Claims**



1. Apparatus for a refrigeration circuit comprising

a compressor for compressing a gas, said compressor having an intake side for receiving gas and a delivery side for expelling compressed gas;

an after-cooler downstream of said compressor for cooling the compressed gas;

cooling means downstream of said after-cooler for at least partially liquefying the compressed gas;

a pair of tanks connected in series to said cooling means to receive the at least partially liquefied compressed gas, a first one of said tanks having a gas space connected to said intake of said compressor to recycle gas thereto; and

an ejector having an intake side connected to a gas space of the other of said tanks to receive gas therefrom, a propellant jet input connected to said delivery side of said compressor and a delivery side connected to said intake side of said compressor.

4,242,886

EARRING STAY

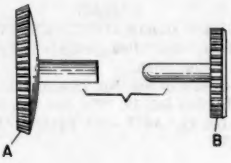
Mary Y. Tucker, 506 W. Bay View Dr., Sandusky, Ohio 44870

Filed May 24, 1979, Ser. No. 42,054

The portion of the term of this patent subsequent to Feb. 20, 1996, has been disclaimed.

Int. Cl.³ A44C *7/00*

U.S. Cl. 63—14 B **1 Claim**



1. An earring stay comprising an article similar to an earring in size, shape and composition, said article including a female section having a tube with a smooth exterior surface and outer diameter adapting it for insertion into the aperture in the lobe of a pierced human ear, said tube having secured at one end thereof a platform adapted to overlie the external lobe surface adjacent one end of said lobe aperture and having its other end free with an opening at said free end; a male section having a shaft of a size to be received within said tube through said opening and having secured at one end thereof a platform adapted to overlie the external lobe surface adjacent the other end of said lobe aperture, said tube and shaft including coacting means which, when the sections are applied to a wearer's lobe, will permit a screw-on earring to be tightly attached to said earring stay without discomfort to the wearer, at least one of said platforms including means for positively preventing the movable part of a screw-on earring clamp from sliding off said one platform.

4,242,887

SHAFT COUPLING

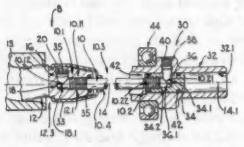
Stanley A. E. Payne, Randburg, South Africa, assignor to Mono Pumps (Africa) (Proprietary) Limited, Edenvale, South Africa

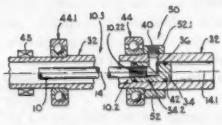
Filed Mar. 5, 1979, Ser. No. 17,652

Claims priority, application South Africa, Mar. 9, 1978, 78/1387

Int. Cl.³ F16C *1/06, 1/26*

U.S. Cl. 64—4 **21 Claims**





1. A shaft coupling comprising

a shaft having at one end a screw-threaded spigot portion having a thrust surface disposed at an oblique angle to the shaft axis;

a mating member having a screw-threaded socket engaged by the spigot portion and having a transverse socket intersecting the screw-threaded socket;

a locking element within the transverse socket and having a locking surface complementary to the thrust surface urged into abutment with the thrust surface.

4,242,888

EXTERNAL MEMBER FOR A TRIPOD JOINT AND METHOD FOR MANUFACTURING SAME

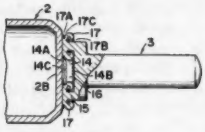
Shigeki Komeiji; Yoshisumi Futamura; Tsugio Mizobe, all of Toyota; Morio Okayama, Togocho, and Isao Iwasaki, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 2, 1978, Ser. No. 912,232

Claims priority, application Japan, Nov. 9, 1977, 52-135155

Int. Cl.³ F16D *3/30*

U.S. Cl. 64—21 **6 Claims**



1. An external member for a tripod joint comprising:

a cup shaped spider holding portion having an imperforate bottom; and

a stem portion having an annular ridge formed on one end, said annular ridge being friction welded to said bottom of said cup shaped spider holding portion.

4,242,889

COUPLING FOR TORQUE TRANSMISSION

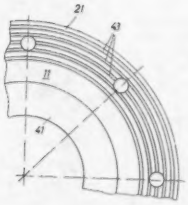
Helmut Müller, and Heinz Schweizer, both of Heidenheim, Fed. Rep. of Germany, assignors to Voith Transmit GmbH, Fed. Rep. of Germany

Filed May 4, 1978, Ser. No. 902,701

Claims priority, application Fed. Rep. of Germany, May 12, 1977, 2721306; Mar. 23, 1978, 2812783

Int. Cl.³ F16D *7/02*

U.S. Cl. 64—30 R **29 Claims**



1. A coupling for rigidly connecting two substantially coaxial machine elements, for transmitting torque, comprising:

said coupling having an axis;

a first coupling member having a first face; a second coupling member having a second face; said first and said second faces in engagement;

a plurality of annular ribs formed on said first face; a corresponding plurality of annular grooves formed on said second face; said ribs and said grooves being circular in shape around their respective said faces; said ribs and said grooves being so placed and shaped such that each said rib engages in a respective corresponding said groove.

4,242,890

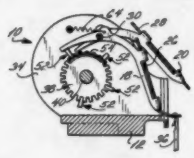
STRIPING BOX WITH MORE THAN ONE YARN FINGER ACTIVATED AT A TIME

Charles Seligson, 160 E. 38th St., New York, N.Y. 10016

Continuation-in-part of Ser. No. 702,858, Jul. 6, 1976, Pat. No. 4,107,954. This application Jul. 24, 1978, Ser. No. 927,218

Int. Cl.³ D04B *15/58*

U.S. Cl. 66—133 **3 Claims**



1. In a striping box for circular knitting machines comprised of a rotating needle cylinder having cylinder needles, a plurality of yarn-carrying fingers, each finger being individually movable between an inoperative position and an operative position in which it feeds the yarn it carries to cylinder needles receiving yarn from the striping box; and means operative in synchronism with needle cylinder rotation for causing more than one of the yarn-carrying fingers to move into and stay in the operative position throughout at least one complete rotation of the needle cylinder to feed yarn from more than one finger at a time to cylinder needles receiving yarn from the striping box during the at least one complete rotation, said means comprising a control drum provided with a circumferential succession of axial holding slots for holding finger-activating jacks, an indexing arrangement operative for indexing the control drum slot-by-slot at preselected intervals each corresponding to at least one complete rotation of the needle cylinder, at least one of the axial holding slots accommodating a plurality of discrete finger-activating jacks, each of the plurality of discrete finger-activating jacks having a leg projecting radially outward from the control drum for finger activation, the projecting legs of respective ones of the plurality of discrete jacks in the axial holding slot being differently located for activating different respective ones of the yarn-carrying fingers of the striping box, each of the individual ones of the plurality of discrete jacks in said at least one holding slot having a radially inward part located radially inward of the radially outermost part of the holding slot and a radially outward part including the respective projecting leg thereof, the radially inward parts of the plurality of discrete jacks each having a thickness less than the thickness of the holding slot, the combined thicknesses of the radially inward parts of the plurality of jacks in the slot being equal to the thickness of the slot for a snug fit in the slot, the radially outward part of each individual one of the plurality of discrete jacks in said at least one holding slot being at least equal to the thickness of the holding slot.

4,242,891

PNEUMATIC TAKE-DOWN DEVICE FOR A CIRCULAR KNITTING MACHINE

Enzo Gradi, Florence, Italy, assignor to Brematex S.p.A., Prato, Italy

Filed Apr. 27, 1978, Ser. No. 900,762

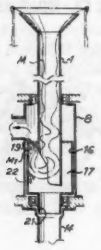
Claims priority, application Italy, Apr. 29, 1977, 9427 A/77

Int. Cl.³ D04B *15/92*

U.S. Cl. 66—149 S **6 Claims**

1. A pneumatic take-down device for a circular knitting machine of the rotating cylinder type comprising a take-down tube mounted in the knitting machine cylinder for rotation therewith, a housing mounted on said tube for rotation therewith and having an article receiving chamber therein, said housing having perforations therein, said tube having an end

opening transversely into said chamber adjacent said perforations for feeding of articles to said perforations, means for applying suction through said perforations to impose a takedown suction to an article in said tube and to retain in said chamber adjacent said perforations the portion of an article



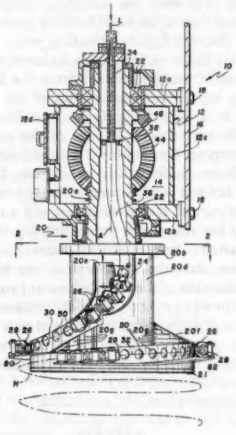
being knit that feeds from said tube into said chamber for rotation thereof with said housing and tube without relative twisting, and said housing having an article discharge opening separate from said perforations for discharge of articles therethrough from said housing upon discontinuance of suction through said perforations.

4,242,892

LAYING HEAD WITH SEGMENTED LAYING PIPE

Robert D. Wykes, Worcester, and Harold E. Woodrow, Northboro, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Apr. 26, 1979, Ser. No. 33,451
Int. Cl.³ B21D *11/00*
U.S. Cl. 72—66 **10 Claims**



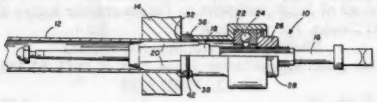
1. In a rolling mill, a laying head for forming a longitudinally moving hot rolled product length into a helix, comprising: a housing; a cone assembly journalled in said housing for rotation about an axis, said cone assembly having a support member with a three dimensional configuration curing around said axis; a plurality of clamp members fixed to said support member at spaced locations along the length thereof; a plurality of discrete tubular guides, said guides being removably retained by said clamp members at operative positions collectively defining a guide path which is parallel to the curvature of said support member; means for receiving said product length along said axis and for delivering said product length into the first of said guides; and, means for rotating said cone assembly, whereupon passage of the product length along said guide path will result in said product length exiting from said laying head in the form of a helix.

4,242,893

STOP COLLAR FOR TUBE EXPANDER

Charles E. Diller, Springfield, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 22, 1979, Ser. No. 41,289
Int. Cl.³ B21D *39/10*
U.S. Cl. 72—122 **5 Claims**



1. In an improved tube expander including a rotatable tubular cage sized to be received in a tube end that is to be expanded, forming rollers carried by the cage for engaging the interior of the tube, and a tapered mandrel extending through the cage for driving the cage and rollers to expand the tube, the improvement comprising a relatively non-rotatable stop collar including:

a hollow, generally cylindrical stop collar body encircling a portion of the mandrel and cage and rotatable relative thereto and having a first end looted adjacent the tube end; and,

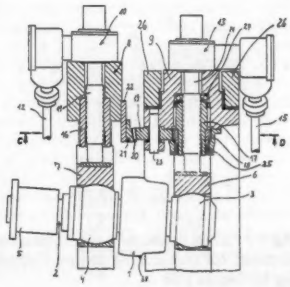
stop means slidingly connected to said first end forming a variable aperture generally encircling said cage for engaging the tube end to limit the movement of said expander into the tube and thereby prevent damage to the tube end.

4,242,894

METHOD AND APPARATUS FOR PRODUCING THIN TUBES IN A SKEW-ROLLING MILL

Walter von Dorp, Monchen-Gladbach, and Heinrich Steinbrecher, Meerbusch, both of Fed. Rep. of Germany, assignors to Wean United, Inc., Pittsburgh, Pa.

Filed Mar. 16, 1979, Ser. No. 21,367
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2814493
Int. Cl.³ B21B *19/06*
U.S. Cl. 72—96 **13 Claims**



1. In a method of producing a thin walled tube wherein a mandrel is inserted in a blank generally parallel to the direction of rolling and the blank is rolled between skewed rollers forming a rolling area in a rolling mill, each roller having an end mounted in a stationary housing and an end mounted in a rotatable housing, the skewed rollers having cooperating shouldered rolling surfaces defining high points wherein upon contact with the blank, the wall is reduced to a relatively small

wall thickness compared to the outer diameter of the rolled tube, comprising the steps of:

(a) shortly before the end of the blank is introduced into the rolling area, pivoting the rotation axes of the rollers about a point remote from the rolling area in the direction of rolling and remote from the high points of the rollers to reduce the adjustment angle between the rotation axis of the inclined rollers and the axis of the rolled tube to effect a change in the rolling action between the rollers and the blank which reduction of angle causes an enlargement of said rolling area, and

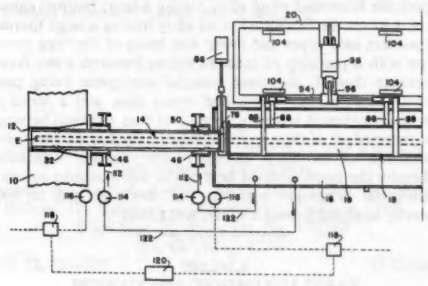
(b) with respect to the enlargement of said rolling area, superimposing a further movement of the skewed rollers in the form of an adjustment movement of the rollers at right angles to the direction of rolling to thereby obtain a rolling condition more conducive to rolling the end portion of the blank.

4,242,895

METHOD AND APPARATUS FOR COOLING AND HANDLING EXTRUDED WORKPIECES

Raymond F. Boshold, Springfield, and Francis J. Kent, Wallingford, both of Pa., assignors to Wean United, Inc., Pittsburgh, Pa.

Filed Sep. 15, 1978, Ser. No. 943,252
Int. Cl.³ B21C *29/00, 35/00;* **C21D** *1/62, 1/667*
U.S. Cl. 72—257 **11 Claims**



1. In a method of cooling a hot extrusion by passing it below the level of a cooling medium immediately after extruded by an extrusion press, having a platen through which the extrusion passes, by employing in cooperative spaced relationship, a cooling tube and a cooling tank, and for quickly emptying and refilling the cooling tube on the experience of certain operational conditions, the steps of:

arranging a cooling tube below the surface level of cooling medium in the cooling tank, which cooling tube has a portion inside said platen to receive an extrusion produced from a die and a portion outside said platen having at least a two-piece member arranged between said platen and said cooling tank into which the extrusion is delivered from said cooling tube,

applying a first source of cooling medium into said tube in a manner that the extrusion is cooled while passing through said platen,

causing said cooling tube to subject the extrusion to cooling from the time it enters said platen until its delivery to said cooling tank,

applying a second source of cooling medium to the extrusion when in said cooling tube after cooling by said first source takes place and before the extrusion enters into said tank,

causing said second source of cooling medium to direct its cooling medium in the direction of travel of said extrusion passing through said cooling tube,

on the experience of said operational conditions, discontinuing said application of said first source of cooling medium, and at the same time, continuing said application of said second source of cooling medium to draw the cooling medium out of said tube and to prevent cooling medium from said tank from passing into said cooling tube, and

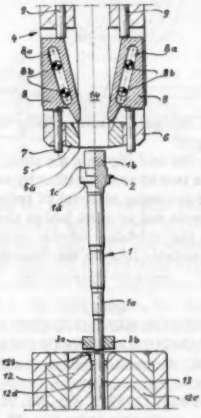
separating said two members to expose at least a portion of said extrusion extending between said platen and said cooling tank for quick removal of said extrusion portion.

4,242,896

APPARATUS FOR FORMING LONG WORKPIECES IN PRESSES

Erwin Kukulies, and Guenther Dietrich, both of Duesseldorf, Fed. Rep. of Germany, assignors to Malmedie & Co. Maschinenfabrik GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jun. 26, 1979, Ser. No. 52,117
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830769
Int. Cl.³ B21D *45/00*
U.S. Cl. 72—345 **6 Claims**



1. In apparatus for forming a long workpiece, said apparatus including a press with at least one plunger and a die cooperating therewith for shaping the workpiece, the improvement which comprises an ejection channel for the workpiece passing axially through the plunger, at least two opposed clamp jaws mounted on the plunger, and means for selectively moving the clamp jaws away from each other and out of the ejection channel, and toward each other so that a portion of each clamp jaw projects into the ejection channel to grip a first end of a workpiece projecting into the ejection channel in the plunger and to center the workpiece with respect to the die, the clamp jaws advancing the workpiece with the plunger toward the die for shaping the workpiece between the die and plunger, and retracting the workpiece from the die with the plunger after the shaping operation.

4,242,897

EXTRUSION MACHINE AND METHOD OF CONTINUOUS TUBULAR EXTRUSION

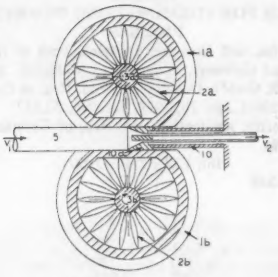
Nazeer Ahmed, and Myrna M. Ahmed, both of 8 Tee Ar Pl., Princeton, N.J. 08540

Filed Mar. 12, 1979, Ser. No. 19,717
Int. Cl.³ B21C *25/04, 29/00, 33/02*
U.S. Cl. 72—262 **11 Claims**

1. A method wherein a tubular product of unlimited length is formed from a material of unlimited length by:

(a) feeding a material of unlimited length into a chamber formed by radially squeezing together two hollow toruses which have suitably shaped grooves on their toroidal surfaces and whose inner rims are connected to drive

shafts by leaf springs and where the squeezing action between the two toruses is of sufficient magnitude to cause a radial deformation in each torus in excess of 0.2 percent but less than an amount which would cause permanent set in either the toruses or the leaf springs and which amount is such that the contact length between the two toruses is at least twice the extrusion length needed for the desired extrusion;



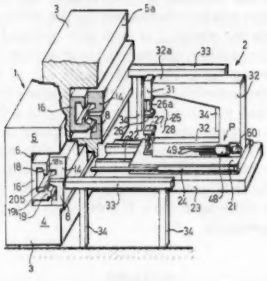
(b) locating a bridge die substantially near the center of contact length;
(c) supporting the said die on a die stem;
(d) rotating the two toruses together by suitable means so as to cause the incoming material of unlimited length to be pushed towards and into the bridge die;
(e) taking up the extruded tubular product of unlimited length on a suitable take up mechanism.

4,242,898

MACHINE FOR BENDING THE EDGES OF RECTANGULAR SHEETS OF METAL

Guido Salvagnini, Arzignano, Italy, assignor to Salvagnini Transferica S.p.A., Sargeo, Italy

Filed Sep. 13, 1978, Ser. No. 941,988
Claims priority, application Italy, Sep. 19, 1977, 27666 A/77
Int. Cl.[3] B21D *5/04*
U.S. Cl. 72—307 **18 Claims**



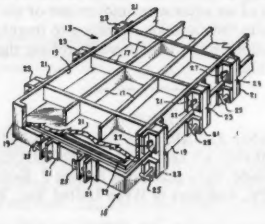
18. A machine for bending a sheet of material, comprising
an integral support structure with outwardly extending support arms;
a bending counterblade positioned on one of the support arms;
a blank-holder counterblade positioned on the other support arm;
said bending and blank-holder counterblades being movable relative to one another;
a unitary bending structure positioned between said support arms and movable relative to said counterblades;
thereby to permit said material to be bent during successive movements of said unitary bending structure relative to said counterblades.

4,242,899

THERMOCLAMPS

Roger S. Raymond, Redondo Beach, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 5, 1979, Ser. No. 17,623
Int. Cl.[3] B21J *1/06*
U.S. Cl. 72—342 **4 Claims**



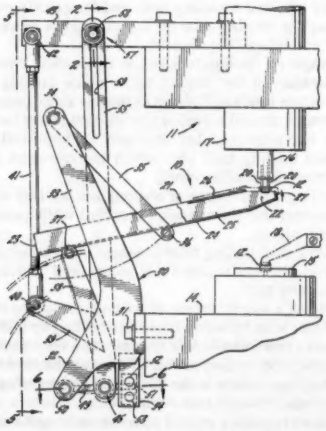
1. A thermoclamp for flattening and forming a sheet material workpiece in a heated oven, said thermoclamp comprising an upper die fabricated of an alloy having a large thermal expansion, a lower die fabricated of an alloy having a large thermal expansion, said upper and lower dies being of the "egg crate" type with a plurality of cross members between outer frame members thereof, the sheet material workpiece being positioned between said upper and lower dies, and a series of vertically oriented wedge activated tie bars attached between the outer edges of the upper and lower dies, said tie bars being fabricated of an alloy having a low thermal expansion, whereby the application of heat to the thermoclamp causes a differential expansion between said dies and said tie bars thereby applying pressure to the workpiece.

4,242,900

PARTS UNLOADING MECHANISM

Paul H. Dixon, Belvidere, Ill., assignor to Dixon Automatic Tool, Inc., Rockford, Ill.

Filed Jul. 9, 1979, Ser. No. 55,986
Int. Cl.[3] B21D *45/00*
U.S. Cl. 72—345 **6 Claims**



1. A mechanism for unloading a part from a machine having

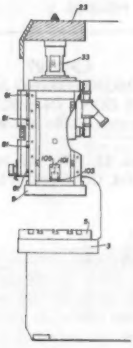
a movable tool and having a drive for reciprocating the tool upwardly and downwardly between lowered and raised positions, the part being carried upwardly with the tool as the latter moves upwardly, said mechanism comprising a tray having a part receiving end and a part discharging end, said tray having a bottom which slopes downwardly and outwardly upon progressing from said part receiving end to said part discharging end, said tray having a lip projecting upwardly from said bottom adjacent the part receiving end of said tray, means mounting said tray on said machine to move outwardly and inwardly between a part receiving position and a part unloading position and to increase the downward slope of the tray during outward movement and decrease the downward slope of the tray during inward movement, the part receiving end of said tray being located beneath said tool and said lip being located inwardly of said part when said tray is in said receiving position and said tool is in said raised position, the tray being located out of the path of said tool when said tray is in said unloading position, means connecting said tray to said drive and operable to move said tray outwardly to said unloading position as said tool moves downwardly and to move said tray inwardly to said receiving position as said tool moves upwardly, and means responsive to initial downward movement of said tool for causing the tray receiving end of said tray to move upwardly to locate said lip alongside said part and thereby cause the lip to knock the part off of the tool and into the tray as said tray moves outwardly as an incident to continued downward movement of said tool.

4,242,901

HYDRAULIC PRESS WITH INTEGRAL KNOCKOUT AND STROKE CONTROL

Eugene W. Pearson, Orinda, Calif., and Wilbur G. Short, Browns, Ill., assignors to Canron Corp., Oakland, Calif.

Filed Mar. 20, 1978, Ser. No. 875,353
Int. Cl.³ B21D *45/00*
U.S. Cl. 72—345 **11 Claims**



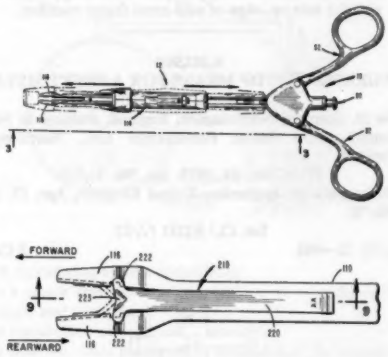
1. A press comprising a frame including a bed, a bolster on said bed for holding one of a pair of complementary dies, drive means for producing a work stroke and a return stroke supported by said frame above said bed for carrying a bolster to which may be affixed the other of such complementary dies, a bolster carried by said drive means, said latter bolster having at least one knockout opening therethrough, knockout means carried by said drive means above said latter bolster for use in conjunction with said knockout openings, and means for actuating said knockout means during the initial portion of a return stroke of said drive means, said knockout means being separate from the die.

4,242,902

SURGICAL CLIP APPLICATOR

David T. Green, Norwalk, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 843,063, Oct. 17, 1977, Pat. No. 4,152,920. This application May 11, 1978, Ser. No. 905,030
Int. Cl.³ B21D *9/08*; A61B *17/10*
U.S. Cl. 72—410 **8 Claims**



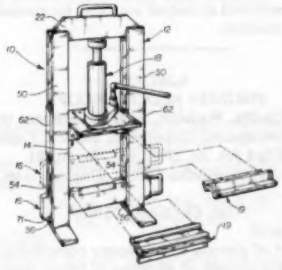
1. In an apparatus for applying surgical clips comprising at one end a pair of opposed spaced-apart grooved jaws; means operably associated with said jaws and adapted to contain a plurality of surgical clips and to feed them singly to a predetermined position between said jaws, and means operable to close said jaws to clinch a clip held therein, the improvement comprising a resilient elongated arm member having clip stop means defining a pair of outwardly directed projections and a concave intermediate portion, said intermediate portion serving to prevent rearward movement of said clip.

4,242,903

MANUALLY OPERATED PINCER MECHANISM FOR PIPELINES

James B. Ledford, 4711 Cowden Pl., Yakima, Wash. 98908, and Edward Niederer, Jr., 19330-3rd Northwest, Seattle, Wash. 98177

Filed Jul. 30, 1979, Ser. No. 61,823
Int. Cl.³ B21J *13/02*
U.S. Cl. 72—413 **7 Claims**



1. A manually operated pipe pincer mechanism, comprising:
a. a generally U-shaped support frame consisting of a top cross frame member and including elongated depending arms from each end of said cross frame member, said arms being comprised of double, spaced apart bar sections,
b. spacer and jaw support members between the bar mem-

bers of each of said arms such that an upper jaw space and a lower jaw space are defined,

c. a slidably removable lower jaw blade supported between said bar members in one of at least two support positions by said spacer members,

d. an upper jaw blade received between said bar members and including a support plate attached to the upper edge thereof, and

e. a manually operated hydraulic jack detachably supported on and between said support plate on said upper jaw blade and the bottom edge of said cross frame member.

4,242,904
WORKPIECE STOP MEANS FOR A SHEET METAL WORKING MACHINE

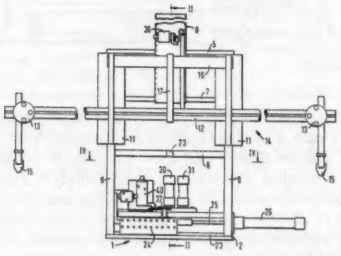
Brian D. Scarrott, Northampton, England, assignor to Northampton Sheet Metal Fabrications Ltd., Northampton, England

Filed Mar. 19, 1979, Ser. No. 21,745

Claims priority, application United Kingdom, Apr. 17, 1978, 14999/78

Int. Cl.³ B21D *11/22*

U.S. Cl. 72—461 **5 Claims**



1. Workpiece stop means for a sheet metal working machine comprising a holder, a plurality of stop members mounted on said holder, a reference face on said holder, each of said stop members being of a respective determined length and being engagable with said holder with one end of each of said stop members abutting said reference face of said holder, a reciprocable carriage, an abutment member on said carriage, means for moving said holder sequentially to present said stop members each for abutment of its other end with said abutment member, a workpiece backstop of the machine mounted on said carriage and control means whereby, by said abutment of said abutment member with said other end of successive ones of said stop members, said carriage and thus said workpiece backstop is positioned at desired locations for successive operations of the machine.

4,242,905
PHONON SPECTROSCOPY

Lawrence J. Challis, Wollaton, England, assignor to National Research Development Corporation, London, England

Filed Jul. 25, 1979, Ser. No. 60,681

Claims priority, application United Kingdom, Aug. 10, 1978, 32932/78

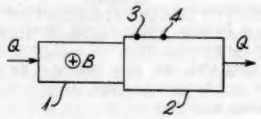
Int. Cl.³ G01N *25/00*

U.S. Cl. 73—15 R **12 Claims**

1. A method of phonon spectroscopy comprising:

passing a heat current of phonons of broad spectral width through a composite solid structure incorporating two solid bodies respectively containing resonant phonons-scattering centres of different types, said bodies being so arranged that the occurrence of a frequency crossing involving two scattering processes respectively associated with said different types of centre will give rise to an excursion in the temperature difference between a pair of given locations on said structure spaced apart in the direction of flow of said heat current;

subjecting said structure to a varying external perturbation



so as to affect the resonant frequency of only one of said scattering processes; and

monitoring the changes of said temperature difference caused by the variation of said perturbation.

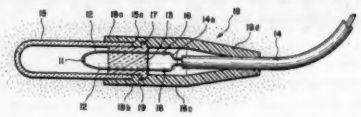
4,242,906
THERMOCOUPLE-EQUIPPED, SOIL PROBE WITH REMOVABLE PROTECTIVE SHIELD

Ralph D. Briscoe, Providence, and Wayne K. Barlow, Logan, both of Utah, assignors to Wescor, Inc., Logan, Utah

Filed Sep. 4, 1979, Ser. No. 72,152

Int. Cl.³ G01N *25/56*; G01K *1/16*

U.S. Cl. 73—73 **6 Claims**



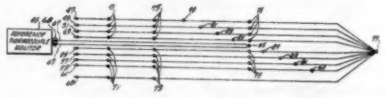
1. A probe for a soil hygrometer or psychrometer, comprising a thermocouple; a mounting block for the thermocouple; a vapor-permeable, thermocouple shield removably engaging said block and protectively encasing the thermocouple; and a tubular, shield-retaining, elastic boot tightly engaging the shield and interlocked with the block, so the shield may be easily removed by pulling it free of the block and the boot and may be subsequently replaced.

4,242,907
APPARATUS FOR MONITORING AND CONTROLLING A FLAT ZONE IN A FURNACE

Casimir W. Kazmierowicz, 26546 Aracena Dr., Mission Viejo, Calif. 92675

Filed Feb. 12, 1979, Ser. No. 11,413

Int. Cl.³ G01K *7/06*

U.S. Cl. 73—341 **9 Claims**

1. A thermocouple probe for monitoring the flat zone profile of a furnace by generating signals indicative of the temperature differential between a plurality of points along the length of the probe, said probe comprising:

a plurality of temperature measuring thermocouple junctions laterally displaced along the length of the probe;

a plurality of reference thermocouple junctions, one for each temperature measuring junction, displaced from and electrically connected to its respective temperature junction, each reference junction being located in a single plane displaced along the length of the measuring portion of the probe; and

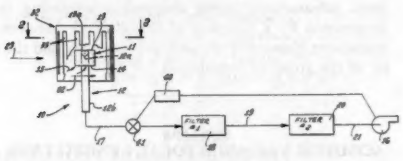
a single common return lead electrically connected to each of the reference junctions and temperature junctions.

4,242,908

PARTICULATE SAMPLER SHIELD

Ivar Tombach, Altadena, Calif., assignor to Aerovironment Inc., Pasadena, Calif.

Filed Jun. 26, 1979, Ser. No. 52,096
Int. Cl.³ G01N *1/24*
U.S. Cl. 73—421.5 R **11 Claims**



1. For use in combination with a particulate matter sampler having an inlet providing particle size cut-off,

(a) porous shield means extending at least part way about said sampler inlet for reducing the velocity of gas flow reaching said inlet via the shield means,

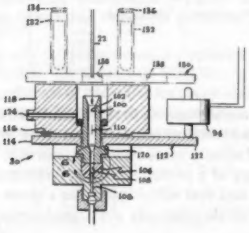
(b) said shield means forming openings that pass the gas and particulate entrained in the gas for flow at reduced velocity within an open interior zone defined by the shield means and adapted to receive said sampler inlet, said open interior zone exposed to multiple of said openings and located generally radially inwardly of such openings and of the shield means between the openings.

4,242,909

SAMPLE INJECTOR

Richard Gundelfinger, Oakland, Calif., assignor to Rheodyne Incorporated, Cotati, Calif.

Filed Apr. 19, 1979, Ser. No. 31,473
Int. Cl.³ G01N *1/12*
U.S. Cl. 73—422 GC **8 Claims**



1. In a sample injecting system which includes a sample loop with inner and outer ends, for receiving a sample liquid originally held in a container, and means for pumping a liquid into the loop to inject a sample therefrom into a chromatographic column or other analyzing device, the improvement comprising:

a loop end coupling for detachably receiving said loop outer end;

means for connecting said loop end coupling to said analyzing device;

motor means for moving said loop outer end downwardly into a container and upwardly out of the container, and downwardly into said loop end coupling and upwardly out of the coupling;

means for withdrawing a liquid; and

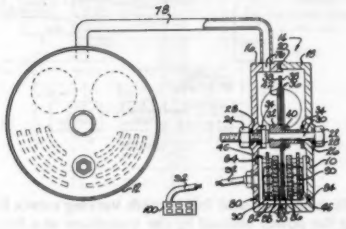
means for alternately connecting said inner loop end to said means for withdrawing a liquid and to said pumping means.

4,242,910

ACCELERATION MONITORING SYSTEM

Andries J. Stoltz, Pretoria, South Africa, assignor to C.W.M. Du Toit Beleggings (Eiendoms) Beperk, Pretoria, South Africa

Filed Apr. 13, 1979, Ser. No. 29,741
Int. Cl.³ G01P *15/08*
U.S. Cl. 73—516 LM **10 Claims**



1. A monitoring system comprising:

(A) a sensor responsive to acceleration in a predetermined plane and comprising

a liquid-filled casing,

a float structure immersed in the liquid in the casing and mounted for pivotal movement about a generally horizontal axis of rotation when the sensor is subjected to acceleration in the predetermined plane, the float structure comprising a pair of spaced floats having centres of bouyancy above and one on each side of the axis of rotation for biassing the float structure to a position in which a datum line movable with the float structure and passing through the axis of rotation adopts a datum position; and

openings in the float structure at different distances from the axis of rotation, at least some of the openings terminating at different angular positions about the axis of rotation; and

(B) means responsive to the sensor for indicating details of acceleration, the responsive means comprising detectors located in the casing at the same distances from the axis as respective openings and each having components on opposite sides of the structure for operating in a first mode when the float structure is interposed between the components and in a second mode when an opening is between the components so that the responsive means will detect differing degrees of acceleration in dependence on the degree of movement of the float structure.

4,242,911

ULTRASONIC MEDICAL DIAGNOSTIC APPARATUS AND METHOD

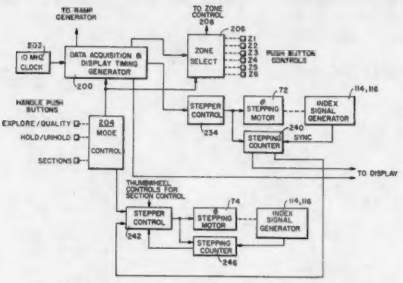
Henry E. Martin, South Windsor, Conn., assignor to Mediscan, Inc., South Windsor, Conn.

Filed Feb. 1, 1979, Ser. No. 8,331
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—620 **25 Claims**

1. In apparatus for the testing of objects with ultrasonic energy, the apparatus including a transducer for generating a beam of ultrasonic energy and means for coupling the generated beam into a test object, the apparatus further comprising means for receiving echoes from within the test object and displaying information commensurate with the received echoes, the improvement comprising:

means for varying the focal length of the generated beam of

ultrasonic energy so as to facilitate examination of differing depths within the test object; and



means coupled to said focal length varying means for varying the power emitted by the transducer as a function of focal length.

4,242,912

METHOD AND APPARATUS FOR PRODUCING CROSS-SECTIONAL IMAGES USING ULTRASOUND

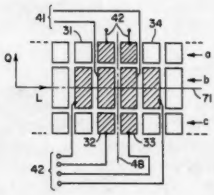
Christoph B. Burckhardt, Muttenz; Pierre-Andre Grandchamp, Münchenstein, both of Switzerland; Heinz Hoffmann, Grenzach, Fed. Rep. of Germany, and Rainer Fehr, Reinach, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 844,092, Mar. 6, 1978, abandoned, which is a continuation of Ser. No. 746,373, Dec. 1, 1976, abandoned. This application Feb. 9, 1979, Ser. No. 11,005

Claims priority, application Switzerland, Dec. 1, 1975, 15555/75; Sep. 23, 1976, 12074/76

Int. Cl.[3] G01N *29/04*

U.S. Cl. 73—626 **33 Claims**



1. An improved method of producing cross-sectional images using an ultrasonic imaging unit operating on the pulse-echo principle and comprising a transducer system having a stationary elongated array of adjacent transducer elements in which unit successively and cyclically selected groups of adjacent transducer elements of the transducer system are used to produce an ultrasonic beam in response to pulsed electric transmitter signals applied to the electrode segments, to transmit the ultrasonic beam, substantially in a scan plane, into a heterogeneous body, to receive echoes reflected from a discontinuity in the body, and to generate an electric echo signal in response to the received echoes, the transmitter signals applied to the transducer elements or element sub-assemblies and/or the echo signal given by the transducer elements or elements sub-assemblies being time-shifted with respect to one another, each transmitter or echo signal being associated with a time shift which is a function of the distance between the corresponding transducer element or element sub-assembly and the center of the group of transducer elements, such that in the case of adjacent transducer elements or element sub-assemblies, the transmitter signal and/or the time-shifted echo signal of the transducer element or element sub-assembly at the greater distance from the middle of the group of transducer elements has a phase lead with respect to the corresponding signal of the other element or element sub-assembly, wherein the improved method comprises:

weakly focussing the ultrasonic beam and/or the corresponding reception characteristic in the scan phase and over the examined depth within the body by means of said timeshifting of the transmitter and/or echo signals and

optimizing the shape of the transmitted ultrasonic beam and/or the reception characteristic by weighting the amplitude of the transmitter and/or echo signals, each transmitter or echo signal of a transducer element or an element sub-assembly being assigned a weighting factor determined by a function of the distance between the transducer element or element sub-assembly and the center of the group of transducers.

4,242,913

ACOUSTIC VARIABLE FOCAL LENGTH LENS ASSEMBLY

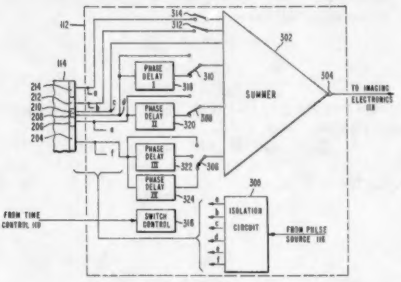
Reuben S. Mezrich, Rocky Hill, and Wilber C. Stewart, Hightstown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 963,806, Nov. 30, 1978, abandoned. This application Jan. 4, 1980, Ser. No. 109,511

Claims priority, application United Kingdom, Dec. 12, 1977, 51687/77

Int. Cl.[3] G01N *29/00*

U.S. Cl. 73—626 **8 Claims**



1. An acoustic variable focal length lens assembly exhibiting a certain fixed relative aperture, said assembly comprising first and second serially spaced acoustic lenses for focusing acoustic wave energy of a predetermined wavelength,

wherein said first acoustic lens has a given physical aperture and a single relatively short predetermined focal length, and

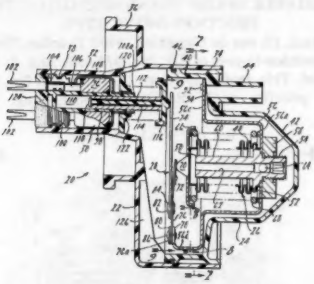
wherein said second acoustic lens includes means for electronically controlling the focal length of said second acoustic lens to have any selected one of a predetermined plural number of different preselected discrete focal lengths, each of said discrete focal lengths being substantially larger than said predetermined focal length, and simultaneously controlling the size of the physical aperture of said second lens, in correspondence with the selection of each different discrete focal length, to have those respective values of size, no greater than said given physical aperture, which result in said assembly exhibiting substantially the same certain relative aperture for all of said different discrete focal lengths,

whereby both the depth of field and the imaging resolution of said lens assembly at said predetermined wavelength and at all of said different discrete focal lengths have substantially fixed values that depend solely on said certain relative aperture of said lens assembly.

4,242,914
PRESSURE TRANSDUCER

Robert W. Eshelman, and Robert P. Benjey, both of Ann Arbor, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Jun. 18, 1979, Ser. No. 49,522
Int. Cl.³ G01L *9/10*
U.S. Cl. 73—711 **7 Claims**



4. A pressure transducer comprising:

a housing comprising two housing elements having mutually interfitting circular cylindrical bore sections which may be rotated relative to each other about a common axis;

an electromechanical device mounted on said housing comprising two elements which are relatively positionable along an axis wherein one of said two elements is an electric circuit element which provides an electrical circuit characteristic whose value corresponds to the relative positioning of said two elements;

a pressure responsive device whose axial length is a function of pressure differential acting thereon and which is mounted on said housing with its axis eccentric relative to the axis of said electromechanical device;

means operatively coupling said two devices such that changes in the axial length of said pressure responsive device in response to changes in pressure differential acting thereon selectively relatively positions said two elements; and

means mounting said coupling means for rotation with one of said bore sections for selectively establishing a desired ratio between change in the axial length of the pressure responsive device in response to changes in pressure differential acting thereon and resultant change in relative positioning of said two elements.

4,242,915
EXTENSOMETER ANCHOR

Charles Herman, III, Pompano Beach, Fla., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Aug. 16, 1979, Ser. No. 66,999
Int. Cl.³ G01N *33/24*
U.S. Cl. 73—784 **7 Claims**

1. An anchoring device for use with an extensometer in an underground mine borehole comprising:

an anchor body shaped to longitudinally fit into the mine borehole and having at least one groove on its outer surface extending substantially around the anchor body;

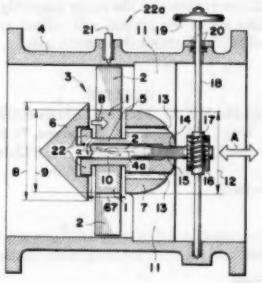
a resilient anchoring member for use in each of said at least one grooves, said member being compressible into a loaded position while mounted in said grooves and having means for attaching a retaining member thereto; and

a retaining member extending towards the opening of the mine borehole and engageable with said means for attaching to normally maintain the anchoring member in a loaded compressed state while in said groove, said retaining member, when removed by pulling from outside the borehole, allowing the anchoring member to expand outwardly to engage the mine borehole and anchor the anchor body therein.

4,242,916
TURBINE METER

Hiroyuki Amemori, Kawasaki, and Shigeru Nishiyama, Ninomiya, both of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Apr. 11, 1979, Ser. No. 29,009
Claims priority, application Japan, Apr. 20, 1978, 53-47088
Int. Cl.³ G01F *1/12*
U.S. Cl. 73—861.83 **7 Claims**

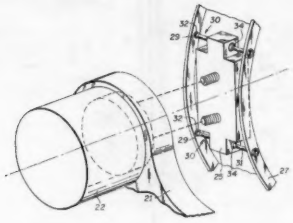


1. A turbine meter comprising: an impeller having a cylindrical body and a plurality of vanes provided on the outer peripheral surface of said cylindrical body; a tube in which said impeller is rotatably supported; members for guiding the flow of a fluid passing through said impeller and disposed at the upstream side and downstream side of said impeller, respectively, at least one of said guide members having a maximum diameter portion greater than the outer diameter of said cylindrical body; and means for permitting an adjustment of the distance between said guide members from the outside of said turbine meter, said means having a movable shaft extending through a stationary shaft fixed to one of said guide members, and members for operating said movable shaft from the outside of said turbine meter, said movable shaft being fixed at one end to the other of said guide members and connected to said members for operating said movable shaft at the other end, and said cylindrical body being rotatably supported on the stationary shaft.

4,242,917
ISOLATION FLEXURE FOR GYROSCOPES

Virgil O. Bennett, and George W. Wilson, both of Phoenix, Ark., assignors to Sperry Corporation, New York, N.Y.

Filed Jul. 3, 1978, Ser. No. 921,301
Int. Cl.[2] C01C *19/16*
U.S. Cl. 74—5.5 4 Claims



1. A gyroscopic device including a rotor assembly adapted to spin about an axis, a gimbal assembly for rotatably mounting the rotor about an axis perpendicular to the spin axis and oppositely disposed and aligned module assemblies including bearing means for receiving the gimbal assembly for rotation wherein said device comprises:

isolation flexure means disposed between and coupled to the gimbal assembly and respective modules, said isolation flexure means being aligned in a plane perpendicular to the gimbal and rotor output axes and parallel to the spin axis,

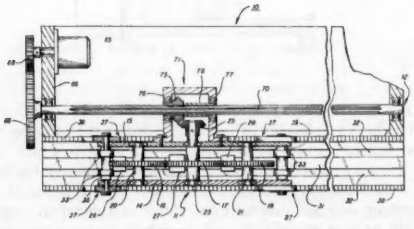
said isolation flexure means having a predetermined relative low stiffness in the plane of the gimbal and output axes and a predetermined relative high stiffness along the spin axis and about the gimbal and output axes, and

whereby said isolation flexure means attenuates vibratory disturbances emitted by the rotor assembly to the module assemblies along the gimbal and output axes and insures torsional stiffness about the output axis.

4,242,918
MECHANICAL PROPULSION SYSTEM

Ladislaw G. Srogi, 338 Apple St., Syracuse, N.Y. 13204

Filed Dec. 26, 1978, Ser. No. 973,247
Int. Cl.[3] F16H *27/04*
U.S. Cl. 74—84 S 17 Claims



6. Apparatus for developing a directional thrust suitable for propelling itself including

an unrestrained frame that is capable of moving freely in any direction,

a shuttle mounted within the frame for reciprocal movement along a linear path of travel:

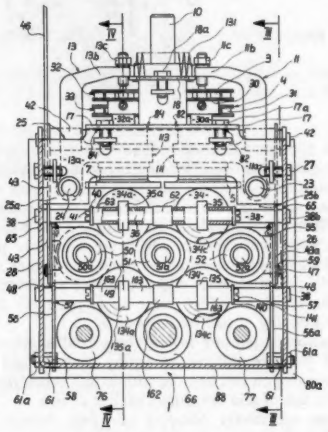
oscillatory means affixed to the shuttle for producing an alternating series of opposed force pulses acting on the shuttle in both directions along said path of travel of said shuttle, and

rectifying means for locking the shuttle to the frame when the force pulses act in a first direction to propel the frame and the shuttle in the first direction, and to unlock the shuttle from the frame when the forces act in a second direction, to move the shuttle in the second direction within the frame along said path of travel.

4,242,919
VARIABLE SPEED TRANSMISSION OF THE FRICTION-DRIVE TYPE

Ulrich Menzi, 13, rue de Chamblon, 1400 Yverdon, Switzerland

Continuation-in-part of Ser. No. 821,499, Aug. 3, 1977, abandoned. This application Sep. 26, 1978, Ser. No. 945,870
Claims priority, application Switzerland, Aug. 6, 1976, 10059/76
Int. Cl.[3] F16H *15/26*
U.S. Cl. 74—198 13 Claims



1. A variable speed transmission of the friction-drive type, comprising:

(a) a driving shaft and drive means mounted thereon;

(b) at least two ball-driving elements;

(c) first torque-transmitting means connected with said drive means of said driving shaft and associated with said ball-driving elements for rotating the latter in unison with said drive shaft;

(d) first ball means comprising first cage means and at least two balls each of which balls is in rolling contact with said ball-driving elements;

(e) driven-shaft means comprising at least three driven shafts disposed parallel to one another;

(f) second ball means comprising second cage means and at least two balls each of which balls is in rolling contact with two of said three driven shafts; one of said two balls of said second ball means being in rolling contact with a middle one and a second one of said three driven shafts, and the other ball of said second ball means being in rolling contact with said middle driven shaft and with the third one of said three driven shafts; the gap between two adjacent ones of said three driven shafts being smaller than the diameter of the ball being in contact with these two adjacent driven shafts;

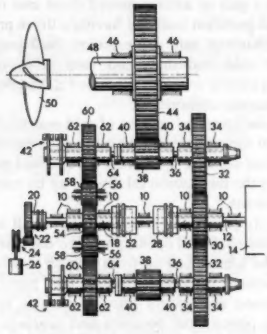
(g) second torque-transmitting means for transmitting torque from said first ball means to said second ball means; and

(h) shifting lever means engaging and being adapted for shifting said second torque-transmitting means, said first cage and said second cage, the shift of said second torque-transmitting means being larger than the shift of said cages.

4,242,920
MARINE REVERSING GEARING

Hans Sigg, Mutschellen, Switzerland, assignor to Maag Zahnräder & Maschinen AG, Zürich, Switzerland

Filed Sep. 13, 1978, Ser. No. 941,989
Claims priority, application Switzerland, Oct. 7, 1977, 12274/77
Int. Cl.³ F16H 3/14
U.S. Cl. 74—361 3 Claims



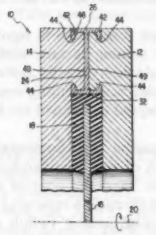
1. A marine reversing gearing comprising:
a drive shaft;
a forward clutch;
a forward pinion arranged substantially coaxially with respect to said drive shaft;
said forward clutch coupling, during forward travel, said forward pinion with said drive shaft;
two intermediate gears continuously meshing with said forward pinion;
two intermediate pinions, each connected with one of the respective intermediate gears;
a large gear continuously meshing with both intermediate pinions;
a reverse clutch;
a rearward pinion arranged substantially coaxially with respect to said drive shaft;
said reverse coupling, during rearward travel, said rearward pinion with said drive shaft;
two reversing pinions driven by said rearward pinion;
a respective rearward gear;
said intermediate gears meshing with said forward pinion constituting forward gears which exclusively transmit power during forward travel;
said reversing pinions both meshing with said rearward pinion and with a respective one of said rearward gears; and each of both intermediate pinions being fixedly connected with one of the rearward gears.

4,242,921
DEFORMED LOCKING CLAMP

Robert C. Bremer, Jr., Brownsburg, Ind., assignor to Wallace Murray Corporation, New York, N.Y.

Filed Oct. 18, 1978, Ser. No. 952,557
Int. Cl.³ F16F 15/10
U.S. Cl. 74—574 4 Claims

1. A torsional vibration damper of the type having a hub and an inertia ring, the hub and inertia ring coupled to each other by an elastomer member, the hub adapted to be coupled to the crankshaft of an engine, the improvement comprising, the inertia ring being formed of two axially spaced ring parts, each said ring part having at least one annular groove on the outer ring periphery, said groove positioned axially between end faces of the ring part, a ring locking element in the form of a radially extending disc carrying at least one generally axially extending locking key, the axially outermost ends of the locking key being received in, respectively, the said ring part annular grooves, the axially outermost ends of the locking key each being deformed to each define a tang which extends at least partially in a radial direction, the outermost diameter of said locking key being no greater than the outermost diameter of

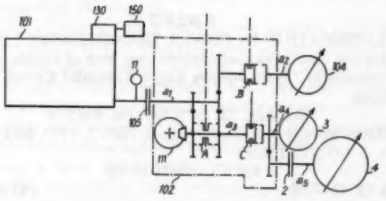


said ring parts, the said radially extending disc being under axial compression and thus exerting an axially extending force against the two ring parts to urge them apart, the tangs of the locking key contacting portions of the annular grooves to resist the disc axially directed force.

4,242,922
HYBRID TRANSMISSION DEVICE OF THE HEAT ENGINE TYPE FOR AUTOMOBILES AND MOTOR VEHICLES

Patrice Baudoin, Bougival, France, assignor to Regie Nationale des Usines Renault, Boulogne Billancourt, France

Filed Aug. 2, 1977, Ser. No. 821,202
Claims priority, application France, Aug. 6, 1976, 76 24060
Int. Cl.³ F16H 47/04; F16D 31/02
U.S. Cl. 74—687 3 Claims



1. A hybrid transmission system for a motor vehicle having an internal combustion engine, said hybrid transmission system comprising:
a reversible, variable displacement hydraulic pump adapted to be driven by said internal combustion engine;
an energy accumulator supplied by said pump;
at least one hydraulic motor selectively supplied by said accumulator and said hydraulic pump;
a mechanical transmission selectively driven by said engine and said hydraulic motor;
means adapted to control the brakes of said vehicle;
means adapted to control the acceleration of said vehicle;
means for sensing brake application;
means for sensing the acceleration of said vehicle;
means for sensing the pressure in said accumulator;
means for sensing the speed of said engine;
means for sensing the displacement of said hydraulic pump;
means for sensing the operation of said hydraulic motor;
pump mode selection means for controlling the displacement of said reversible hydraulic pump;
means for controlling the pressure in said accumulator;
means for controlling the displacement of said reversible hydraulic motor;
a first logic means responsive to signals from said accumula-

tor pressure sensing means, said engine speed sensing means, and said pump displacement sensing means, for activating said pump mode selection means and for actuating said means for controlling the pressure in said accumulator;

hydraulic motor coupling means for coupling said hydraulic motor to said transmission so that said transmission may be driven thereby;

a second logic means responsive to signals from said accumulator pressure sensing means, said brake application sensing means, and said hydraulic motor operation sensing means, for activating said coupling means and for activating said means adapted to control the brakes of said vehicle;

the second logic means having a comparator which is known per se, the output of said comparator being adapted to supply on the one hand the control electrode of a first analog switch and through a reversing switch the control electrode of a second analog switch and a third analog switch and, on the other hand, the control electrode of a fourth analog switch;

engine coupling means for coupling said engine to said transmission so that said transmission may be driven thereby;

a third logic means responsive to signals from said accumulator pressure sensing means, and vehicle acceleration sensing means, for activating said means for controlling the displacement of said hydraulic motor and for selectively activating said hydraulic motor coupling means and said engine coupling means; and

control and switching means for controlling the operation of said mechanical transmission, said control and switching means responsive to signal from said vehicle acceleration sensing means, and said brake application sensing means for activating said means fro controlling the displacement of said reversible hydraulic motor and for selectively activating said hydraulic motor coupling means and said engine coupling means.

4,242,923

LUBRICATION IN POWER TRANSMISSION UNIT

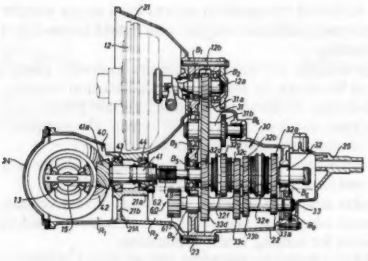
Kazuyoshi Nishikawa, and Makoto Uno, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Aug. 22, 1978, Ser. No. 935,776

Claims priority, application Japan, Nov. 2, 1977, 52-132287; Nov. 2, 1977, 52-132288

Int. Cl.[2] F16H *37/08*

U.S. Cl. 74—700 **11 Claims**



1. In a power transmission unit, for a motor vehicle, comprising a trans-axle casing secured at its upright front seating face to a cylinder block of an engine and having an upper compartment to contain therein a disengageable coupling for connection to a crankshaft of said engine and a lower compartment to contain therein a final drive gearing and a differential gear unit, and a transmission casing sealingly jointed at its upright front seating face to the upright rear seating face of said trans-axle casing to contain therein a change-speed gearing drivingly connected to an output member of said disengageable coupling, said change-speed gearing having a countershaft with counter gears for selectively driving respective change-speed gears on a mainshaft which includes an input gear arranged to be driven by rotation torque of said output member to drive one of said counter gears, and in which said trans-axle casing is provided therein with an upright partition wall to subdivide the lower compartment into front and rear chambers, and said final drive gearing includes a drive pinion shaft supported by a pair of axially spaced front and rear bearings carried on said partition wall and having a drive pinion located in the front chamber, said drive pinion shaft being coaxially connected to said mainshaft and said drive pinion being meshed with a crown wheel to drive said differential gear unit, the improvement comprising:

stirring means mounted on one of said mainshaft and countershaft to dip up lubrication oil in the rear chamber,

an oil receiver secured to the rear-face of said partition wall to receive the lubrication oil dipped up by rotation of said stirring means,

an axial cavity provided on said partition wall adjacent said drive pinion shaft and opening toward the rear chamber to receive the lubrication oil from said oil receiver, and

a lateral passage provided through said partition wall to communicate said cavity into an annular space around said drive pinion shaft between said bearings.

4,242,924

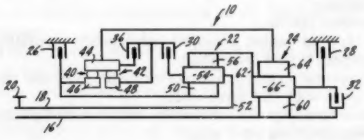
TRANSMISSION MECHANISM

Barry J. Melhorn, and Alex Krulikowski, both of Westland, Mich., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 21, 1978, Ser. No. 944,432

Int. Cl.[3] F16H *57/10*

U.S. Cl. 74—759 **6 Claims**



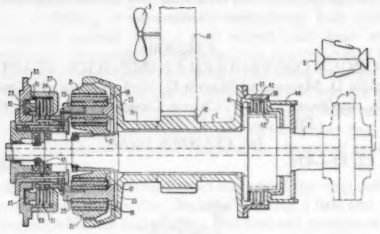
1. A transmission mechanism for an engine driven vehicle providing a plurality of drive ratios and including a pair of planetary gear sets; an input shaft; said gear sets each having a sun, ring, and planetary carrier element, each planetary carrier element having a plurality of pinion gears journalled thereon, said pinion gears meshing with said sun and ring elements; said input shaft being connected to an element of one of said planetary sets; clutch means engageable to connect said input shaft to another element of said one planetary set, thereby locking up said one planetary gear set when engaged; second clutch means engageable to connect an element of each of said gear sets together; separate brake means for an element of each of said gear sets; an output shaft connected to one of said elements of the other gear set such that by selective engagement of said clutch and brake means said plurality of ratios may be established through said transmission; a pair of one-way engaging devices having a common outer race connected to an element of said one gear set, said devices having one inner race being connectable to one of said brake mechanisms and another inner race being connectable to an element of said other gear set, whereby said devices can at times connect the last-mentioned element of said one gear set to said brake and at times connect same to an element of said other gear set.

4,242,925

REVERSING APPARATUS

Alexander Farkas, Sunnyvale, Calif., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 17, 1978, Ser. No. 925,086
Int. Cl.³ F16H *3/44*
U.S. Cl. 74—792 **10 Claims**



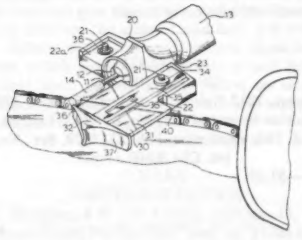
1. Reversing apparatus for reversing a propeller of a ship driven by a unidirectional drive, said apparatus comprising
a first shaft directly connected to the unidirectional drive;
a second shaft connected to the propeller;
a sun gear affixed to said first shaft;
a plurality of planet gears meshing with said sun gear;
a ring gear directly connected to the second shaft and meshing with said planet gears;
said planet gears being rotatably disposed in a planet carrier;
braking means connected to said planet carrier to stop rotation of said planet carrier when engaged and reversing the direction of rotation of said second shaft and the propeller; and
clutching means disposed between said first and second shaft whereby engagement of said clutch and disengagement of the brake will cause the first and second shafts to rotate in the same direction and the propeller to rotate in the ahead direction.

4,242,926

DEVICE FOR SHARPENING SAW CHAINS

Nicholas T. Anton, Park Ridge, Ill., assignor to Wen Products, Inc., Chicago, Ill.

Filed Sep. 4, 1979, Ser. No. 72,420
Int. Cl.³ B23D *63/16*
U.S. Cl. 76—25 A **11 Claims**



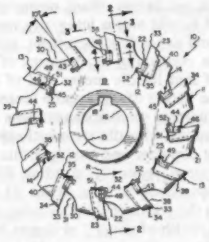
2. For use with a portable electric grinding tool or drill, a saw chain sharpening device comprising:
a detachable housing with two channels laterally spaced from a central opening which allows for mounting on a portable electric grinding tool, a means of fastening a guide plate in each of the channels, a thumb grip on the upper rear surface of the housing, and a means for locking the housing onto the electric grinding tool;
a grinding bit, one end of the bit to be clampedly attached to the chuck of the portable electric grinding tool, the other end of the bit containing a grinding portion of a size required to sharpen the cutting portion of a saw chain; and
a guide plate which removably mounts in either channel of the housing so as to be parallel with the axis of the grinding bit and so as to rest on the top plates of adjacent teeth of a saw chain, being displaced from the axis of the grinding bit for proper placement of the grinding bit against the cutting portion of the saw chain tooth.

4,242,927

METHOD OF MAKING A CUTTING TOOL

Ronald R. Oaks, North Tonawanda, N.Y., assignor to Niagara Cutter Inc., North Tonawanda, N.Y.

Division of Ser. No. 896,738, Apr. 17, 1978, Pat. No. 4,193,719.
This application Apr. 23, 1979, Ser. No. 32,632
Int. Cl.³ B21K *5/12*
U.S. Cl. 76—101 A **3 Claims**



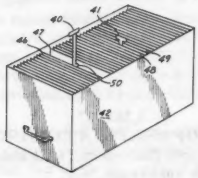
1. A process of fabricating an inserted blade rotary cutting tool, comprising the steps of:
forming a rotatable fixture body having opposite radial side faces joined by a peripheral surface and provided with at least one slot extending between such fixture body side faces and opening to such fixture body peripheral surface, said fixture body slot being bounded by spaced and facing leading and trailing wall surfaces separated by an intermediate base surface and also having a radial rake;
forming a blade blank having inner and outer ends and leading and trailing blade surfaces, one of which is provided with a locating groove having a width corresponding to the thickness measured axially of said fixture body between its said side faces;
inserting such grooved blade blank in said fixture body slot with its said inner end against such fixture body base surface and with the base of such blade locating groove against the opposing one of said fixture body wall surfaces;
wedging said blade blank in said fixture body slot such that said blade blank is axially and radially held in a predetermined position relative to said fixture body;
shaping the outer end of said blade blank to concentric form with respect to the axis of rotation of said fixture body;
removing such shaped blade from said fixture body;
forming a rotatable cutter body having a similar thickness and slot configuration as for said fixture body except that the radial rake thereof is less than that for said fixture body slot;
and inserting and wedging said shaped blade in said cutter body slot in a manner similar to that followed for said fixture body, the shaped blade when so mounted on said cutter body having a radial relief on the trailing side of the cutting edge of predetermined profile, and permitting repeated blade sharpenings while maintaining said profile.

4,242,928

FILING AID

Belle J. Haley, and Robert D. Haley, both of 2525 Robb Ct., Lakewood, Colo. 80215

Filed May 14, 1979, Ser. No. 38,911
Int. Cl.³ B25B *9/02*; B65G *7/12*
U.S. Cl. 81—3 R **3 Claims**



1. A filing aid for manipulating files in a drawer or cabinet comprising:

(a) a thin, rigid handle means of about 2½ to 4½ inches wide arranged for being grasped and turning the same,

(b) a rigid, thin and narrow shank means of substantially the thickness of handle means integrally secured to said handle means and depending therefrom, and

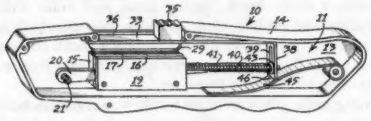
(c) a rigid file contacting head means of substantially the thickness of said handle means and of about 2–4 inches wide and the height of said handle means mounted on the end of said narrow shank means on the end opposite said handle means, said handle means, shank means and head means being coplanar and having a thin profile for being pressed between vertically standing files and having a combined length of at least about 11 inches which is greater than the width of the files being manipulated, said head means width of about 2–4 inches being sufficient to separate adjacent files between which said aid is passed, said aid being sufficiently strong and rigid to withstand turning motions by turning said handle.

4,242,929

WIRE STRIPPING DEVICE

Fults J. Bobby, Rte. 1, Box 340CC, Decherd, Tenn. 37324

Filed Mar. 16, 1979, Ser. No. 21,118
Int. Cl.³ H02G *1/12*
U.S. Cl. 81—9.5 R **8 Claims**



1. A device for stripping annular insulation from a conductor of substantially circular cross-section comprising:

(a) a stationary block member including an upper platform surface having a longitudinal dimension,

(b) an elongated knife blade projecting above said platform surface,

(c) a plate member above said platform surface and having a bottom conductor-gripping face,

(d) mounting means supporting said plate member for longitudinal and vertical movement over said platform surface and said knife blade for engaging an insulated conductor spanning said platform surface transversely over said knife blade and rolling said conductor, causing said knife blade to circumferentially cut the insulation on said conductor,

(e) said mounting means comprising a first elongated guide member projecting longitudinally of one end of said block member,

(f) said mounting means further comprising a second elongated guide member projecting from said plate member longitudinally in the same direction as said first guide member,

(g) cooperative means coupling said first and second elongated guide members to permit relative longitudinal movement of one of said guide members relative to said other guide member, and

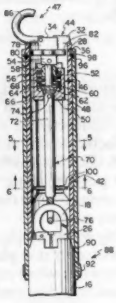
(h) said mounting means permitting vertical movement of said plate member relative to said platform surface.

4,242,930

TORQUE CONTROLLED CLAMP STICK ADAPTER

Franklin D. Myers, and Marvin D. McKelvy, both of Centralia, Mo., assignors to A. B. Chance Company, Centralia, Mo.

Filed Apr. 27, 1979, Ser. No. 34,196
Int. Cl.³ B25B *23/142*
U.S. Cl. 81—474 **11 Claims**



8. A clamp stick comprising:

an elongated body;

a manipulative tool; and

means for mounting said tool adjacent one end of said body for axial rotation of the tool as desired,

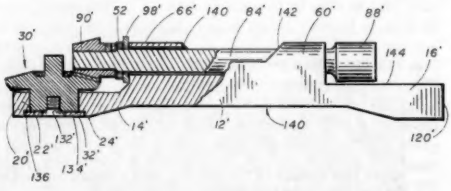
said mounting means comprising an elongated, tubular, axially rotatable head, means for axially rotatably securing said head to said body, an operating assembly at least partially located within said head including a torque limiting device presenting a torque input and a torque output, means operatively connecting said output to said tool, and means operatively connecting said device input to said body, said torque limiting device having means for transmitting torque from said input to said output only up to a predetermined maximum torque.

4,242,931

GEAR WRENCH

Burke Clement, 1213 Galewood, Knoxville, Tenn. 37919

Continuation-in-part of Ser. No. 877,302, Feb. 13, 1978, abandoned. This application Feb. 22, 1979, Ser. No. 14,037
Int. Cl.³ B24B *17/00*
U.S. Cl. 81—57.29 **3 Claims**



1. A gear wrench comprising in combination: a first member

having first and further end portions, said first member being elongated and defining a recess at its further end portion, said recess being proportioned for receiving a member to assist in gripping and maintaining said wrench stationary during tightening and loosening operations,

a housing carried by said first end portion of said first member, said housing defining a substantially cylindrical bore,

a driven gear rotatably mounted on said housing, said driven gear including a substantially cylindrical hub portion integrally formed with a gear wheel, said gear wheel defining a substantially planar surface circumscribed by a plurality of gear teeth, and a stud extending substantially perpendicularly from the central portion of said surface,

a tubular member carried by said first member, said tubular member having a first end portion and a further end portion, said tubular member defining an elongated opening therethrough,

a shaft rotatably received in said elongated opening defined by said tubular member, said shaft having a first end portion and a further end portion, said first end portion of said shaft extending beyond said first end portion of said tubular member and disposed proximate said teeth on said gear wheel, said further end portion of said shaft defining a first recess, and said further end portion of said first member defines a further recess, said first and further recesses being proportioned to receive conventional attachments whereby said wrench is fully integrated with a conventional socket set,

a gear pinion secured to said first end portion of said shaft and including teeth which mesh with the teeth of said gear wheel, said gear pinion defining a first end surface which is disposed substantially perpendicularly to the surface of said gear wheel such that upon advancing a socket onto said stud, said first end surface of said pinion gear is disposed at a spaced location from said socket and is at least partially coextensive with the length of said socket whereby a portion of the socket is recessed within the meshing space of said gears thereby reducing the volume necessary for the functioning of the wrench, and

means for shielding the gears from the hand of an operator, said means for shielding said gears comprising a thrust washer interposed between said gear pinion and said first end portion of said tubular member, said gear pinion including a hub which is slotted, a shouldered washer including a coupling side which mates with said slotted gear pinion hub, such that said slotted hub and said shouldered washer turn as a unit, said shouldered washer further including an opposite side which bears against said thrust washer such that the wear occasioned by the rotation of said gear pinion is imparted to said shouldered washer rather than said gear pinion hub, said slotted hub including sections between the slots of said hub, and wherein said shaft defines at its first end portion shouldered down sections which engage the sections of said hub between said slots upon mounting said pinion on said first end portion of said shaft whereby rotation of said gear pinion with respect to said shaft is prohibited.

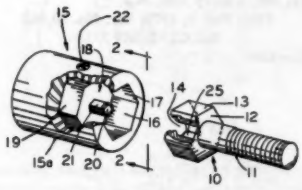
4,242,932

FASTENING DEVICE

Thomas C. Barmore, 4 N. 127 Verrill, Addison, Ill. 60101

Continuation of Ser. No. 861,349, Dec. 16, 1977, abandoned.
This application Mar. 28, 1979, Ser. No. 24,711
Int. Cl.³ B25B *13/48;* F16B *23/00*
U.S. Cl. 81—437 **3 Claims**

1. A fastening device comprising a bolt having a threaded shank and a body, said body having a polygonal outer surface, said body having also an axial cavity in its end, said bolt having a polygonal surface at the side boundry of its cavity, a socket having an axial cavity extending inwardly from its end, said socket having a polygonal surface at said side boundary of its cavity, and an auxiliary drive member having an outer polygonal surface and being axially moveable into the cavity of said socket with its outer polygonal surface in engagement with said polygonal surface of said socket, said auxiliary member having an axial extension therefrom which is provided with an outer polygonal surface, said socket being axially moveable with said auxiliary member contained within its cavity, into engagement with said bolt, to bring its polygonal surface at the boundary of its cavity into engagement with said outer polygonal surface of the body of said bolt and to bring the polygonal surface of said extension into engagement with said polygonal surface at the side boundary of said cavity in said bolt body, whereby turning of said socket causes the application of torque directly from said socket to said bolt and also indirectly through said auxiliary member to said bolt.

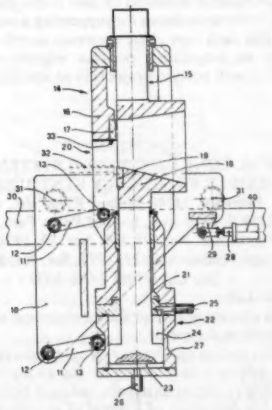


4,242,933

METHOD AND APPARATUS FOR SHEARING BILLETS WITH HYDRAULIC SHEARS IN CONTINUOUS CASTING PLANT

Steno Famos, Ronchi dei Legionari; Fulvio Fasano, Gorizia, and Alfredo Bassarutti, Terenzano, all of Italy, assignors to Officine Meccaniche Danieli & C. SpA, Udine, Italy

Division of Ser. No. 648,720, Jan. 13, 1976, Pat. No. 4,154,129.
This application Jan. 15, 1979, Ser. No. 3,644
Claims priority, application Italy, Jan. 13, 1975, 83303 A/75
Int. Cl.³ B23D *25/04;* B26D *1/60*
U.S. Cl. 83—37 **2 Claims**



1. A process for the continuous shearing of billets in continuous casting plants comprising the steps of (1) longitudinally moving a shearing device having first and second movable blades constructed with a piston and cylinder means for movement of said blades in harmony with a billet to be sheared; (2) causing a first blade of the moving shearing device to approach a first edge on a billet and rest on said billet by means of said cylinder and piston means; (3) thereafter causing the second blade on said shearing device, positioned opposite said first blade, to approach a second edge on said billet being sheared by means of said cylinder and piston means; and (4) thereafter

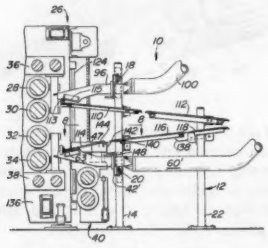
causing said blades to continue their cutting course and cut into and shear said billet while said shears are supported substantially only by said billet.

4,242,934

TRIM CHUTE APPARATUS

Robert E. Coburn, Warminster, Pa., assignor to Molins Machine Company, Inc., Cherry Hill, N.J.

Filed Feb. 9, 1979, Ser. No. 10,562
Int. Cl.³ B26D 7/18
U.S. Cl. 83—100 **9 Claims**



1. Trim chute apparatus comprising a frame having an upper web path and a lower web path, first and second upper trim chutes supported by said frame for reciprocal movement transverse to said upper web path, first motor means coupled to said upper trim chutes for simultaneously moving the upstream end of said trim chutes toward and away from each other, third and fourth lower trim chutes supported by said frame for reciprocal movement transverse to said lower web path, second motor means coupled to said lower trim chutes for simultaneously moving the upstream end of said lower trim chutes toward and away from each other, at least one web support member mounted on said frame below the elevation of said upper trim chutes for supporting a web in the upper web path, at least one web support member mounted on said frame above the elevation of said lower trim chutes for supporting a web in the lower web path, and each trim chute upstream mouth portion being movable to an inoperative position wherein the extent to which each mouth portion projects in an upstream direction is decreased.

4,242,935

MUSICAL TONE GENERATOR SYSTEM USING MULTIPLE FREQUENCY SYNTHESIZERS

Richard H. Peterson, 11748 Walnut Ridge Rd., and Robert A. Finch, 12219 S. 89th Ave., both of Palos Park, Ill. 60464

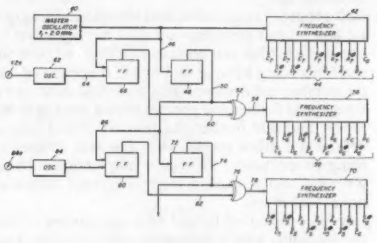
Continuation of Ser. No. 678,358, Apr. 19, 1976, abandoned. This application Aug. 25, 1977, Ser. No. 827,655
Int. Cl.³ G10H 1/10, 5/00
U.S. Cl. 84—1.01 **8 Claims**

1. A tone generator system for an electrical musical instrument, said system comprising,

at least first and second frequency synthesizers, one for each of two related octaves, each having an input terminal and a plurality of output terminals, and each being operative to divide the frequency of a signal of appropriate frequency applied to its input terminal to produce at its output terminals a like plurality of pitches corresponding to different notes of the musical scale, said at least first and second frequency synthesizers having like frequency dividing factors associated with like output terminals so as to be operative in response to application thereto of input signals of the same frequency to produce the same pitches at corresponding output terminals thereof,

a first source of clock pulses connected to the input terminal of said first frequency synthesizer, said first source having a frequency to produce at a given plurality of the output terminals of said first synthesizer a like plurality of notes of the musical scale in one octave, which notes inherently have slight errors in frequency from corresponding notes of the true equitempered scale which differ in sense and degree from note to note as a function of its frequency dividing factors, and

a second source of clock pulses connected to the input terminal of said second frequency synthesizer, the frequency of said second source differing from the frequency of said first source by a factor which differs from a power of two by one or more nominal semitones such that said second frequency synthesizer is operative in response to clock pulses from said second source to produce at the plurality of output terminals of said second synthesizer corresponding to the said given plurality of output terminals of said



first synthesizer, a like plurality of notes in a related octave which individually are octavely unrelated to the notes produced at like output terminals of said first synthesizer, which notes also inherently have slight errors in frequency from the true equitempered scale which differ in sense and degree from note to note, with the error from true equitemperament appearing at a given output terminal of said second synthesizer being of the same sense and magnitude as the error from true equitemperament appearing on the corresponding output terminal of said first synthesizer, whereby, because different notes appear on corresponding output terminals of said first and second frequency synthesizers, temperament interval errors inherent in said first and second frequency synthesizers are randomized.

4,242,936

AUTOMATIC RHYTHM GENERATOR

Richard S. Swain, Niles, Ill., assignor to Norlin Industries, Inc., Deerfield, Ill.

Filed Sep. 14, 1979, Ser. No. 75,831
Int. Cl.³ G10H 1/42, 7/00
U.S. Cl. 84—1.03 **13 Claims**

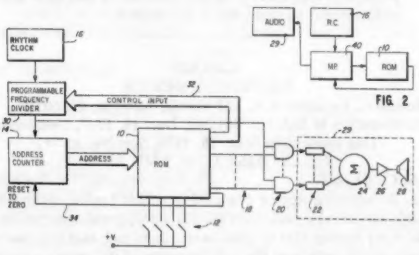


FIG. 2

1. An automatic rhythm generator comprising:

means developing a rhythm clock signal defining a sequence of rhythm clock intervals;

a memory storing a sequential set of rhythm instructions at a plurality of consecutive memory addresses, each of said

rhythm instructions including an associated code representing a number of said rhythm clock intervals; and

means for sequentially addressing said memory at a rate determined by the number of rhythm clock intervals represented by the code associated with the presently addressed memory address.

4,242,937

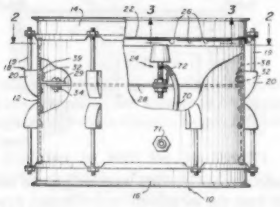
PICKUP ASSEMBLY FOR PERCUSSION INSTRUMENT

Cleve F. Pozar, 125 Green St., Cambridge, Mass. 02139

Continuation-in-part of Ser. No. 857,180, Dec. 2, 1977, abandoned. This application Feb. 8, 1979, Ser. No. 10,226

Int. Cl.³ G10D *13/02*

U.S. Cl. 84—1.15 **19 Claims**



1. A pickup apparatus for a percussion instrument that has a vibratable diaphragm, said apparatus comprising:

a single pickup means disposed within the instrument,

a plurality of ferromagnetic members each including a thin foil and means for securing each foil directly to the undersurface of the diaphragm whereby said foils are spacedly disposed along a locus extending from the center of the diaphragm to the edge thereof,

means for mounting said single pickup means within the instrument facing the ferromagnetic members in one of a plurality of positions aligned with one of said ferromagnetic members,

said means for mounting comprising a support bar having a width substantially less than the diameter of the percussion instrument extending in a direction between opposite side walls of the percussion instrument and including a pickup means mounting section extending substantially parallel to the diaphragm and having a length at least sufficient to permit positioning of said single pickup means in alignment with any of said ferromagnetic members,

said pickup means mounting section being at least as long as the width of two adjacent ferromagnetic members including the spacing therebetween,

and means for releasably locking said single pickup means to the pickup means mounting section in a fixed position in alignment with one of the ferromagnetic members,

said single pickup means being adjustable relative to the ferromagentic members to enable tone adjustment.

4,242,938

STRINGED MUSICAL INSTRUMENT

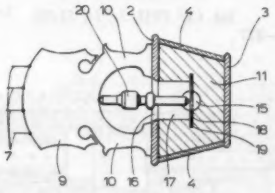
Henk van Zalinge, Schapendrift 84, Blaricum, Netherlands

Filed Dec. 14, 1978, Ser. No. 969,460

Int. Cl.³ G10D *1/02*; G10H *3/00*

U.S. Cl. 84—1.16 **9 Claims**

1. A stringed musical instrument comprising a resonating body formed by a front plate, back plate and side ribs, said body having a narrow elongate shape; a neck secured to the body; a bridge supported on the front plate; strings extending across the body and neck and stretched across the bridge; an electrical pick-up element associated with said bridge for connection to an electrical amplifier and loudspeaker system; and a transverse sound-beam arranged in and forming part of said body, dividing the latter into two separate resonating chambers of unequal size, said sound-beam extending across the whole width of the body between the side ribs thereof and fittingly engaging the inner sides of the front plate and back plate of the body, and said sound-beam having a first bore formed therein extending in the longitudinal direction of the



body connecting said two resonating chambers, said bridge being supported on the front plate at said sound-beam, and said pick-up element being mounted between and engaging said bridge and said body at said sound-beam.

4,242,939

BLIND FASTENER

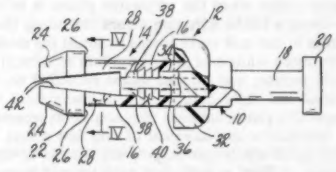
Michael L. Osborne, Sutton Coldfield, and Michael J. Hadley, Great Barr, both of England, assignors to USM Corporation, Farmington, Conn.

Filed Oct. 12, 1978, Ser. No. 950,586

Claims priority, application United Kingdom, Oct. 15, 1977, 42995/77

Int. Cl.³ F16B *13/04*

U.S. Cl. 411—41 **10 Claims**



1. A two-part pull-type blind fastener comprising a pull-part having a shank provided by a plurality of legs, the legs joined at rear ends to a pulling stem and at their other, free, forward ends having external, rearwardly facing shoulders lying in a plane at right angles to a longitudinal axis of said shank, and a push-part axially slidable on said shank, the shank legs passing through apertures in the push-part, and a plug projecting forwardly from said head, the plug being accommodated in, and extending part way along, the shank and capable, after the shank has been inserted through a hole in a workpiece and the plug has been advanced to a position between said shoulders, of holding the legs apart with the shoulders overlying the workpiece around the hole at the blind side, the fastener also comprising means for effecting such interengagement of the two parts that movement of separation of the head of the push-part and the shoulders of the shank legs, after they have been urged towards one another to clamp the workpiece therebetween and the portion of the pull-part projecting from the head of the push-part has been removed, is prevented.

4,242,940

FLUID OPERATED CONTROL DEVICE

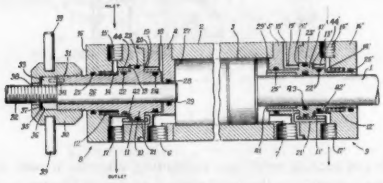
Victor J. Page, 47 Westmiston Ave., Saltdean, Sussex, England

Filed Oct. 17, 1977, Ser. No. 842,791

Claims priority, application United Kingdom, May 30, 1977, 22742/77

Int. Cl.[2] F01L *31/14, 25/06*

U.S. Cl. 91—277 **10 Claims**



1. A fluid operated control device comprising,

a first cylinder containing a first piston for reciprocal displacement between first and second locations at respective ends of said first cylinder, said first cylinder being provided with inlet and outlet means for supplying fluid to and from said cylinder to cause displacement of said first piston; valve means mounted at respective ends of said first cylinder, one of said valve means having a second cylinder containing a second piston and the valve means at the other end having a third cylinder containing a third piston, said second and third cylinders each having first and second biasing means for urging the respective second and third pistons toward a first position in the path of displacement of said first piston, said second and third pistons being thereby alternatively displaced, in response to said first piston, to second positions, and each said second and third cylinders being provided with a signal inlet and outlet, said signal inlets and outlets providing signal inputs and outputs respectively in accordance with the positions of said second and third pistons, each said signal inlet communicating with the respective signal outlet when the respective piston is in its first position and each said signal inlet being isolated from the respective signal outlet when the respective piston is in its second position; a stroke adjusting means extending through the piston in one said valve means to adjust the stroke of said first piston while said first piston is in reciprocal displacement motion; and exhaust means provided on each said second and third cylinder for releasing fluid when the respective piston has been displaced to its second position in response to displacement of said first piston, whereby said signal inputs and outputs are useable to control the supply of fluid to said first cylinder and hence control displacement of said first piston, one of said first and second biasing means being a pressure biasing means that is relieved while the other biasing means is maintained while either of said second or third pistons is moved toward its second position in response to said first piston, said stroke adjusting means shifting its associated piston to relieve said pressure biasing for its associated piston.

4,242,941

ACTUATOR VALVE

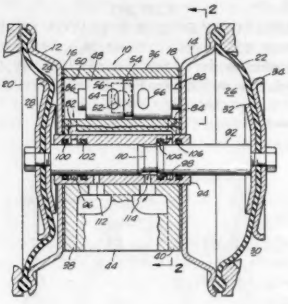
James K. Wilden, Yucaipa, and Alan D. Tuck, Jr., Upland, both of Calif., assignors to Wilden Pump & Engineering Co., Colton, Calif.

Filed May 14, 1979, Ser. No. 38,685

Int. Cl.[3] F01L *25/06*

U.S. Cl. 91—319 **4 Claims**

1. An actuator valve for an air driven reciprocating device, comprising a valve piston, a control rod fixed to reciprocate with the air driven reciprocating device, and a housing having a cylinder closed at each end and enclosing said valve piston, a passageway through which said control rod extends, an air inlet to said cylinder spaced from the ends of said cylinder, valve piston vent passages extending from the ends of said cylinder to said passageway, and control rod vent passages extending from said passageway to atmosphere, said valve piston cooperating with said housing to include means for directing incoming air to the ends of said valve piston and



means for selectively directing incoming air to and exhausting outgoing air from the air driven reciprocating device, wherein the improvement comprises an axial passage in said control rod positioned between said valve piston vent passages to vent selectively each of said valve piston vent passages to said control rod vent passages.

4,242,942

HYDRAULIC POSITIONER WITH FEEDBACK DEVICE

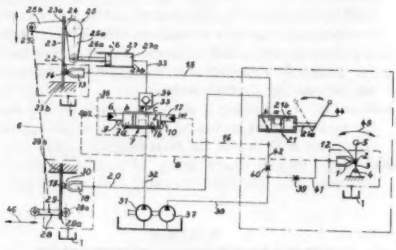
Reiner Bartholomäus, Neuendorf; Karl-Heinz Bernhardt; Wolfgang Eberhard, both of Lohr; Hans-Dieter Kokus, Niederkassel; Herbert Lembke, Lohr, and Heinz Schulte, Marktheidenfeld, all of Fed. Rep. of Germany, assignors to G. L. Rexroth GmbH, Lohr, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,818

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811585

Int. Cl.[3] F15B *13/16*

U.S. Cl. 91—358 R **17 Claims**



1. A hydraulic control arrangement for positioning an implement comprising a source of operating fluid under pressure; a hydraulic positioner; a pressure line connecting said source to said positioner; a fluid operated three-position selector valve in said pressure line movable between a neutral position connecting said source to a reservoir and two operating positions, in one of which said source is connected to said positioner to move the latter in one direction and in the other of which said positioner is connected to the reservoir so as to move in the other direction, said selector valve including spring means tending to maintain the same in said neutral position and two opposite pilot chambers for respectively moving said selector valve to either of its operating positions; mechanical means

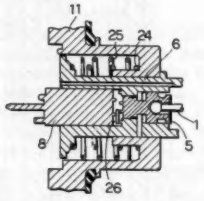
connecting said positioner to said implement; a source of control fluid under pressure; a first control line connecting said source of said control fluid to one of said pilot chambers; a fixed throttle and an operator controlled adjustable throttle cooperating therewith in said first control line for producing a predetermined pressure according to the setting of said adjustable throttle, said predetermined pressure being fed to said one pilot chamber tending thereby to move said selector valve from said neutral to one of said operating positions; and feedback means comprising a second control line connecting said source of control fluid to the other of said pilot chambers, and a second fixed throttle and at least one adjustable throttle cooperating therewith and adjusted by engagement with said mechanical means operated by said positioner.

4,242,943

BOOSTER UTILIZING FLUID PRESSURE

Akira Nakamura, Shizuoka, and Masato Oguri, Susono, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 26, 1978, Ser. No. 919,071
Claims priority, application Japan, Jan. 23, 1978, 53-535981
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—369 A **14 Claims**



1. A booster, utilizing fluid pressure, for amplifying an operation force delivered from an operation mechanism in order to transfer the same to a succeeding mechanism, said booster comprising;

a power piston movably disposed between a constant-pressure chamber on one side thereof, and a variable-pressure chamber on the other side thereof, for being actuated by the pressure difference between said two chambers;

an input member which may be shifted by the operation force from said operation mechanism, said input member being on said other side of said power piston;

a control valve actuated by the shifting of said input member to communicate said variable-pressure chamber with said constant-pressure chamber or a high pressure source, which is higher in pressure than said constant-pressure chamber, for varying the inside pressure of said variable pressure chamber;

an output mechanism for transmitting the resultant force of the operation force delivered to said input member and an actuating force of said power piston to said succeeding mechanism, said output mechanism being on said one side of said power piston; and

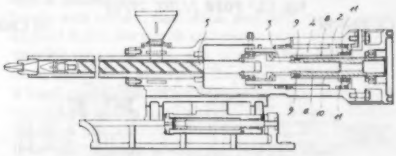
said control valve comprising a control member disposed relatively movably to said power piston, and a spring means disposed between said power piston and said control member, whereby the variation of the elastic force of said spring means produced by the operation of said power piston can be transferred, via said control member, to said control valve for regulating the operation of said control valve, said spring means biasing said control member toward said constant pressure chamber and biasing said power piston toward said variable pressure chamber.

4,242,944

PLASTICS MOULDING MACHINE

Jui-Lieh Su, 37 Lane 355, Fu-Chian Rd., Tainan, Taiwan

Filed Oct. 27, 1978, Ser. No. 955,398
Int. Cl.³ F01B *21/00*
U.S. Cl. 92—2 **2 Claims**



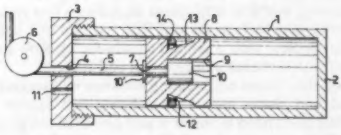
1. An improved plastics moulding machine of the type comprising a hydraulic oil operating cylinder, an injection ram operating within said cylinder, and a rotating shaft system operating coaxially through the ram, wherein the improvement comprises: a fixed annular sleeve disposed between the ram and the shaft system, said shaft system operating through said sleeve, and an hydraulic seal provided between said ram and said sleeve, whereby said shaft is isolated from the hydraulic oil.

4,242,945

ASSEMBLY WITH RELATIVELY DISPLACEABLE MEMBERS

Claes-Gustav E. Y. Tisell, Strangnas; Karl E. B. Lundell, Bromma; Sven H. N. Horner, Eskilstuna; Gustav Y. Thorstensson, Sollentuna, and Gustav S. E. Karlstedt, Sollentuna, all of Sweden, assignors to Forenade Fabriksverken, Eskilstuna, Sweden

Continuation of Ser. No. 534,812, Dec. 20, 1974, abandoned.
This application Sep. 8, 1976, Ser. No. 721,220
Claims priority, application Sweden, Dec. 21, 1973, 7317345
Int. Cl.³ F15B *15/26*
U.S. Cl. 92—26 **10 Claims**

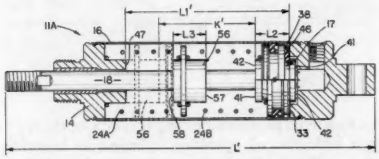


1. An assembly comprising an inner and an outer cylindrical member, respectively, the inner member being relatively axially displaceable along the inner peripheral surface of the outer member, means for axially displacing said inner member relatively to said outer member, the inner member being provided with an annular peripheral recess, a resilient split ring being lodged in the recess fully retractable into same but elastically biased in radial direction toward the inner peripheral surface of the outer member, the recess having a first flank and a second flank, the first flank lying in a radial plane of the inner member, the second flank extending in a plane oblique to the longitudinal center line of the inner member, forming an angle with the longitudinal axis of said inner member that is less than 30°, the first flank bearing equatorially on the ring upon axial displacement of the inner member relative to the outer member in a first direction, and upon axial displacement of the inner member relative to the outer member in a second direction said ring is displaced from bearing upon said first flank and said ring is caused to move along said second flank such that the second flank is applying to the ring a substantially radial outward jamming pressure toward the inner peripheral surface of the outer member whereby the ring is jammed like a wedge and locks the inner member against substantial displacement in the second direction.

4,242,946
FLUID PRESSURE CYLINDER CONVERTIBLE FOR USE WITH OR WITHOUT INTERNAL BUMPERS

Vytautas J. Toliusis, Paw Paw Township, Van Buren County, Mich., assignor to Humphrey Products Company, Kalamazoo, Mich.

Filed Aug. 2, 1978, Ser. No. 930,422
Int. Cl.³ F01B *11/02, 29/04*
U.S. Cl. 92—59 **26 Claims**



1. In a fluid pressure cylinder having an identical preselected piston stroke whether provided with or without resilient bumpers, said cylinder including a housing having spaced end caps fixedly connected by a sleeve, piston means slidably and sealingly engaged with the interior of said sleeve for reciprocating movement relative to said housing between first and second end postions disposed adjacent said first and second end caps respectively, and a piston rod fixed to said piston means and slidably projecting outwardly through at least one of said end caps, the improvement comprising:

said piston being axially nonsymmetrical and selectively axially oriented in one axial orientation or the other, relative to said housing, so as to be respectively used with or without resilient bumpers;

connecting means for fixedly joining said piston means to said piston rod in either axial orientation of said piston means relative to said housing, said connecting means including first means on said rod engageable with second means on said piston means;

first stop means cooperating between said first end cap and said piston means for defining said first position when said piston means is in said one axial orientation relative to said housing, said first stop means including a first rigid axially-facing stop surface on said first end cap and adapted for engagement with a second axially-facing stop surface on said piston means adjacent one end thereof;

second stop means cooperating between said second end cap and said piston means for defining said second position when said piston means is in said one axial orientation, said second stop means including a third rigid axially-facing stop surface on said second end cap and adapted for engagement with a fourth resilient axially-facing stop surface on said piston means adjacent the other end thereof;

third stop means cooperating between said first end cap and said piston means for defining said first position when said piston means is in said opposite axial orientation relative to said housing, said third stop means including a fifth rigid axially-facing stop surface on said piston means adjacent said other end thereof and adapted for engagement with said first stop surface;

fourth stop means cooperating between said second end cap and said piston means for defining said second position when said piston means is in said opposite axial orientation, said fourth stop means including a sixth rigid axially-facing stop surface on said piston means adjacent said one end thereof and adapted for engagement with said third stop surface;

said piston means being free of resilient bumper means when disposed in said opposite axial orientation;

said piston means including resilient bumper means mounted thereon when said piston means is disposed in said one axial orientation, said bumper means defining thereon said fourth stop surface with the latter being engaged with said third stop surface when the piston means is at one end of its stroke, the fifth stop surface on said piston means being spaced from and maintained out of engagement with said second end cap when the piston means is at said one end of the stroke;

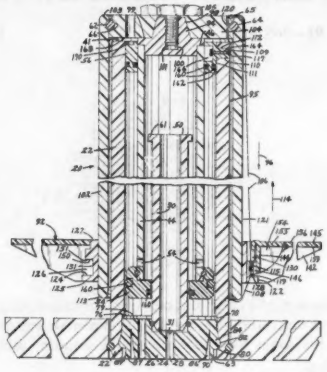
the axial distance between said first stop surface and said third stop surface at its point of engagement with said fourth stop surface, minus the axial distance between said second and fourth stop surfaces, being equal to said preselected stroke of said piston means when the latter is in said one axial orientation; and

the axial distance between said first stop surface and said third stop surface at its point of engagement with said sixth stop surface, minus the axial distance between said fifth and sixth stop surfaces, also being equal to said preselected stroke of said piston means when the latter is in said opposite axial orientation.

4,242,947
HYDRAULIC ACTUATOR

Robert A. Renner, and Ralph Lovelace, both of Mankato, Minn., assignors to Renner and Lovelace, Inc., Mankato, Minn.

Filed Jul. 28, 1978, Ser. No. 929,009
Int. Cl.³ F01B *11/00, 29/08*
U.S. Cl. 92—108 **15 Claims**



1. A hydraulic actuator, comprising:

an open ended cylinder having first and second ends and a plurality of female bayonet fitting receptacles formed circumferentially within said second end;

a blind end plug having extension and retraction fluid transfer ports extending through its axial thickness, said blind end plug closing the first end of said cylinder;

a retract tube having first and second ends and an axial bore through its longitudinal length, mounted at its first end within the cylinder to the blind end plug so that said axial bore communicates with the retraction fluid transfer port of the blind end plug;

an actuator end plug having an aperture extending through its axial thickness and a plurality of radially extending male bayonet extensions formed in its circumferential surface, said extensions circumferentially disposed to correspond to locations of said female bayonet fitting receptacles formed in said cylinder, said actuator end plug closing the second end of said cylinder by insertion and locking of said male bayonet extensions in said female bayonet fitting receptacles;

a piston, having first and second axial faces, slidably disposed within said cylinder for axial movement therein, said piston having an aperture extending through its axial thickness to accommodate said retract tube and permit relative movement therewith;

means for preventing axial movement of said piston toward

the second end of said cylinder beyond the second end of said retract tube;

an extender tube, with first and second ends, mounted at its first end to the second axial face of said piston in encircling relation to, and spaced radially from, the retract tube, its second end extending through the aperture of said actuator end plug, said extender tube disposed for relative axial movement therewith, and said extender tube having a fluid passageway formed through the wall of said extender tube intermediate the second axial face of said piston and said actuator end plug;

means for closing the second end of said extender tube;

an effective work member disposed external to said cylinder for axial movement relative thereto;

a sleeve with first and second ends, said sleeve disposed radially intermediate said cylinder and said effective work member for axial movement relative thereto;

means for maintaining a fixed axial relationship between said sleeve and said extender tube; and

cable means having first and second ends, said first ends retained at said male bayonet extensions and said second ends attached to said effective work member, said cable means extending in a first axial direction within said sleeve from said male bayonet extensions to the second end of said sleeve, and, thereafter, in a second axial direction without said sleeve to the point of attachment at said effective work member.

4,242,948

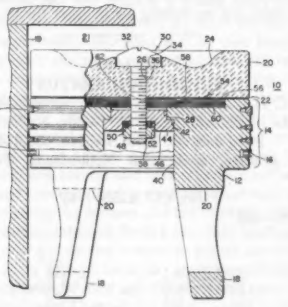
INSULATED COMPOSITE PISTON

John H. Stang, Columbus, and Kenneth A. Johnson, Elizabethtown, both of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 755,760, Dec. 30, 1976, abandoned. This application Dec. 16, 1977, Ser. No. 861,467

Int. Cl.[2] F01B *31/08;* F16J *1/00*

U.S. Cl. 92—212 **1 Claim**



1. A piston for an internal combustion engine, said piston comprising:

a crown portion of temperature resistant material, said crown portion having a circular periphery;

a one piece aluminum piston body having a circular periphery, said crown portion and said piston body having opposed planar surfaces, the opposed planar surface of said crown portion being the sole surface facing said piston body, and the opposed planar surface of said piston body being defined by a recess in said piston body facing said crown portion;

a plurality of stacked steel discs having a relatively low conductivity planar interface between adjacent discs and positioned between the opposed planar surfaces of said crown portion and piston body for forming a low effective thermal conductivity interface, the planar surface of said crown portion extending radially outward at least as far as the periphery of said discs,

means for fastening said crown portion to said piston body, thereby sandwiching said discs between the crown portion and the piston body, said discs being freely separable from one another in the absence of the fastening means,

whereby the temperature gradient across said crown portion is minimized,

wherein said crown, said discs, and said piston body have aligned holes, the one in said piston body terminating in an interior recess thereof, and wherein said fastening means comprises a bolt extending through said holes and having a head positioned on said crown portion and a threaded portion extending through said piston body to said interior recess, a nut threaded onto said bolt, and a plurality of belleville washers positioned between said nut and said piston body for yieldably urging said piston body and crown portion towards one another, said piston body has a larger diameter hole than the one through said crown portion said piston further comprises a steel sleeve-like insert supported in said hole of said piston body, said insert having a flange which abuts the interior recess of said piston body, said washers acting between said insert and said nut; and

wherein said discs do not extend to the periphery of the interface between the crown portion and the piston body, the overall thickness of said stacked discs being selected so that the crown portion and said piston body are maintained out of contact with one another.

4,242,949

APPARATUS FOR MAKING PACKAGING SLEEVES

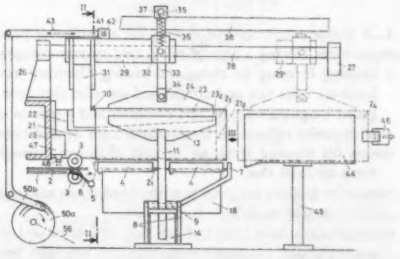
Robert Auckenthaler, Schaffhausen, Switzerland, assignor to SIG - Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Apr. 23, 1979, Ser. No. 32,479

Claims priority, application Switzerland, Apr. 21, 1978, 4346785/78

Int. Cl.[3] B31B *1/52*

U.S. Cl. 493—295 **13 Claims**



1. In an apparatus for making a packaging sleeve from a sheet blank, including a mandrel having a length dimension; folder means for wrapping the sheet blank about the mandrel, whereby opposite free longitudinal edge zones of the blank are brought into an overlapping relationship on the mandrel; pressing means for pressing and bonding the overlapping edge zones to one another for obtaining a seam along the length dimension of the packaging sleeve; the improvement wherein said mandrel has a recess extending in said length dimension; said pressing means comprises an elongated first pressing shoe arranged to be receivable in said recess and to be displaceable in its length dimension parallel to the length dimension of said mandrel; said first pressing shoe having at least one face that complements a face of said mandrel into a substantially continuous folder face; said pressing means further including a second pressing shoe arranged to cooperate with said first pressing shoe for pressing overlapping edge zones of the blank sheet to one another; said pressing means further comprising shoe

moving means connected to said first and second pressing shoes for displacing said second pressing shoe towards or away from said first pressing shoe into a pressing state and a relased state, respectively, and for shifting said first and second pressing shoes as a unit relative to said mandrel and parallel to the length dimension thereof for stripping the packaging sleeve from said mandrel with said first and second pressing shoes.

4,242,950

MOTOR VEHICLE HEATER AND VENTILATOR

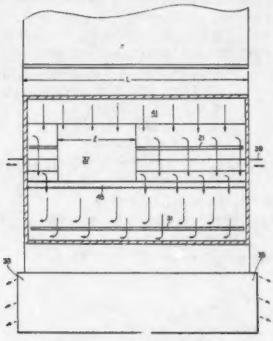
Holger Grossmann, Ingolstadt, Fed. Rep. of Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Sep. 7, 1978, Ser. No. 940,163

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742670

Int. Cl.³ B60H *1/02*

U.S. Cl. 98—2 **9 Claims**



1. A temperature control system for a vehicular passenger compartment having a pair of sides, said system comprising:

a housing forming an elongated mixing chamber having a fresh-air inlet slot and a modified-air inlet slot each elongated longitudinally of said chamber and a pair of outlets at opposite respective longitudinal ends of said chamber;

means for feeding fresh air to said chamber through said fresh-air inlet slot;

means for feeding temperature-modified air to said chamber through said modified-air inlet slot;

respective conduits leading from said outlets to said sides of said vehicular passenger compartment, whereby temperature-modified air and fresh air are mixed in said chamber and the mixture is conducted from said outlets and through the respective conduits to the respective sides of said passenger compartment;

a guide extending the full length of one of said slots;

a slide plate substantially shorter than said guide and longitudinally displaceable therealong; and

means for displacing said slide plate longitudinally along said guide and thereby blocking air flow out of said one slot into said mixing chamber at said slide plate over only the length thereof to increase in said mixing chamber adjacent said slide plate the proportion of air issuing from said other slot to air issuing from said one slot, whereby when said slide plate is closer to one of said longitudinal ends of said mixing chamber than to the other end thereof the temperature of the air issuing from the respective outlet will be closer to that of the air issuing from said other slot than that of the air issuing from said one slot.

4,242,951

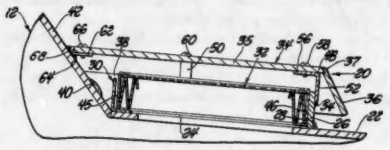
AIR INTAKE VENT FOR ARMORED VEHICLE

James M. Bemiss, St. Clair Shores, Mich., assignor to Cadillac Gage Company, Warren, Mich.

Filed Aug. 6, 1979, Ser. No. 64,325

Int. Cl.³ B60H *1/28, 3/06*

U.S. Cl. 98—2.11 **11 Claims**



1. In an armored vehicle including a cowl having an opening, an air intake vent comprising: a front armor plate welded to the cowl so as to extend upwardly therefrom spaced forward of the opening therethrough, a holder for mounting an air filter over the cowl opening with the filter supported on the cowl forward of the opening therethrough, a cover of armor plate mounted over the cowl opening spaced above the front armor plate on the cowl, and a front flange on the cover extending downwardly forward of the front armor plate in a spaced relationship thereto, the front cover flange having a lower edge terminating below the upper extremity of the front armor plate in an upwardly spaced relationship from the cowl so as to prevent projectiles from passing through the cowl opening while still permitting air to enter the vehicle.

4,242,952

PEELING APPARATUS

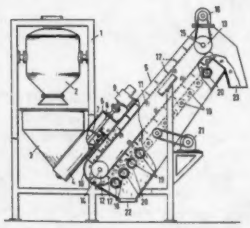
Peter W. C. van der Schoot, Oudekerk, Netherlands, assignor to Goudsche Machinefabriek B.V., Gouda, Netherlands

Filed Jan. 30, 1976, Ser. No. 653,814

Claims priority, application Netherlands, Feb. 3, 1975, 7501239

Int. Cl.² A23N *7/02*

U.S. Cl. 99—625 **11 Claims**



1. Apparatus for peeling tuberous fruits comprising an elongated tunnel-like transporting channel defined by fruit contacting upper and bottom walls between which said fruits are to be conveyed, the distance between said upper and bottom walls being such that fruit being passed therethrough can move freely across said channel to cannon between said upper wall and said bottom wall, said bottom wall being formed by the

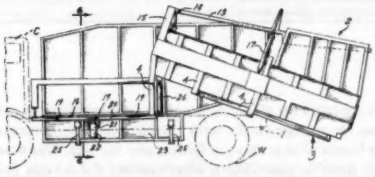
upper surface of a plurality of slightly interspaced parallel rollers positioned tranversely to the main transport direction of the tuberous fruits, said rollers provided circumferentially with peel removing elements, said upper wall of the transporting channel comprising the lower part of at least one endless conveyor belt which is smooth on the side facing said rollers, said rollers connected to means for rotating the same at a circumferential speed greater than the speed of said endless conveyor belt and at sufficient speed to impart rotation to fruit in contact therewith while removing peel from said fruit and discharging said peel away from said channel and the transporting direction of the fruit and through interspaces between rollers by centrifugal speed of rotation of said rollers, the circumferential speed of said rollers being sufficient to cause said fruit to bounce and bound away from said rollers while rotating and against said endless conveyor belt whereby the fruit's speed of rotation is altered upon striking said endless conveyor belt.

4,242,953

GARBAGE COLLECTING TRUCK

Denis St-Gelais, 110 de la Barre St., Longueuil, Quebec, Canada (J4K1A3)

Filed May 30, 1979, Ser. No. 43,657
Claims priority, application Canada, May 10, 1978, 303044
Int. Cl.³ B30B *7/00, 15/32*
U.S. Cl. 100—100 **4 Claims**



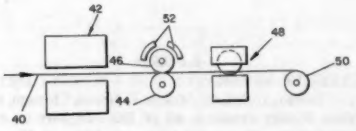
1. A garbage collecting truck comprising a truck chassis mounted on front and rear wheels, a driver cabin mounted at the front of said truck chassis, two separate elongated refuse collecting compartments mounted side by side longitudinally of said truck chassis and rearwardly of said driver's cabin, each compartment comprising a bottom and upstanding side walls, each compartment open at its rear end, the bottom of each compartment being longitudinally straight and inclined upwardly in the forward direction relative to said truck, each bottom terminating at its rear end at a level below the top of said rear wheels and behind said rear wheels, a refuse pushing power-operated ram mounted in each compartment longitudinally movable along the bottom and between the side walls of the respective compartments from a rearmost loading position adjacent the rear end of the bottom in which the top edge of the ram is at a low enough level to permit manual refuse loading of the compartment over and ahead of said ram by persons standing on the ground behind the truck, one of said compartments serving to receive recyclable refuse mainly consisting of paper and fabric, the other of said compartments serving to receive mainly non-recyclable refuse, the bottom of said one compartment terminating short of said driver's cabin at its front end, a platform carried by said truck chassis and extending longitudinally of said truck intermediate said driver's cabin and the front end of said bottom of said one compartment and a lower level than the front end of said last-named bottom, said front end forming part of a discharge opening at the front of said one compartment, said one compartment, together with its ram serving to form successive bales of said recyclable refuse, which are pushed by said ram in said one compartment past said bottom front end and dropped onto said platform in a position to be unloaded from said truck, said other compartment extending longitudinally forward of said truck alongside said platform and forming a closed chamber at its front end portion, said front end portion having a side door in its side wall facing exteriorly of the truck, said other compartment power tiltable transversely of said truck for unloading of said other compartment upon opening of said side door.

4,242,954

CALENDAR ROLL SYSTEM

Gordon L. McDaniel, Graham, Tex., assignor to Graham Magnetics Incorporated, North Richmond Hills, Tex.

Filed May 23, 1978, Ser. No. 908,644
Int. Cl.³ B30B *3/04*
U.S. Cl. 100—176 **6 Claims**



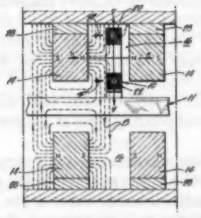
1. A calender roll system, having (A) as a compliant roll thereof, a calender roll comprising, as a surface thereover, a sleeve of a shape-memory alloy which is plastically deformable characterized by an ability after its surface is marred, to return to its original shape after being heated at a transformation temperature; and (B) a second roll forming means adjacent said compliant roll to force a web against said compliant roll.

4,242,955

MAGNETICALLY ACTUATED EQUIPMENT

Carl I. Wassermann, Great Neck, N.Y., assignor to North Atlantic Industries, Inc., Hauppauge, N.Y.

Filed Mar. 13, 1978, Ser. No. 887,293
Int. Cl.³ B41J *9/38*
U.S. Cl. 101—93.29 **4 Claims**



1. Magnetically actuated equipment for use in a printer or the like comprising first and second groups of permanent magnets, the magnets of said groups being respectively located in planes displaced from and substantially parallel to each other, said magnets of each group being further displaced with respect to one another so that gaps are formed between adjacent magnets in each group, the magnets of each group having a pair of opposed surfaces of opposite polarity and being positioned so that the surfaces of like polarity of adjacent magnets are presented toward one another across the gaps between the said adjacent magnets in each group, the surfaces defining a gap in the first group being in substantial alignment with the surfaces defining a gap in the second group and being of opposite polarity with respect to the surfaces in the second group, the like poles of the magnets in said groups being spaced in proximity to one another to form fields having field portions extending generally parallel to the surfaces defining the gaps and in opposite directions from a neutral axis within each gap, the proximity of the magnets producing an amplification of flux density in said field portions, generally planar conducting coils movably mounted within said gaps, an impact member associated with each coil for movement upon movement of said coil, means for independently electrically exciting each

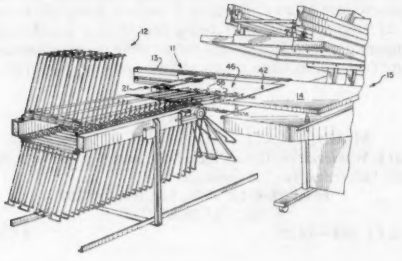
coil whereby pulsed magnetic fields are established when said coils are excited, each said coil being disposed within a gap with the coil axis extended transverse to said surfaces of like polarity, each said coil being wound upon a support of non-magnetic material and having oppositely disposed legs located within the oppositely extending field portions.

4,242,956

TAKEOFF APPARATUS FOR A WICKET DRYER

Henry J. Bubley, Deerfield; Melvin E. Green, Chicago, and Alex Iaccino, Mount Prospect, all of Ill., assignors to American Screen Printing Equipment Company, Chicago, Ill.

Filed Feb. 13, 1978, Ser. No. 877,245
Int. Cl.³ B41F *15/12, 21/08*
U.S. Cl. 101—123 **1 Claim**



1. A takeoff apparatus particularly adapted to automatically transfer stock from the printing bed of a screen printing press to a wicket dryer having a plurality of rows of wickets movable along the upper and lower surfaces of said dryer, said takeoff apparatus comprising:

a single elongated support arm, said support arm being mounted to said printing press at a corner of said printing bed;

a transfer carriage movable along said support arm between a takeoff position adjacent said printing press and a delivery position adjacent said wicket dryer;

mounting means for mounting an end of said transfer carriage to said support arm for movement therealong, said mounting means including a channel attached to said support arm, a pair of first rollers vertically mounted to said transfer carriage, said first rollers being disposed within said channel for movement therealong, an angle iron comprising a fixed stem perpendicular to an upright stem, the end of said fixed stem being mounted to said support arm, a pair of second rollers horizontally mounted to said transfer carriage, said rollers being disposed on opposite sides of said upright stem of said angle iron for movement therealong, whereby said first and second rollers support one end of said transfer carriage on said support arm for reciprocation therealong; and,

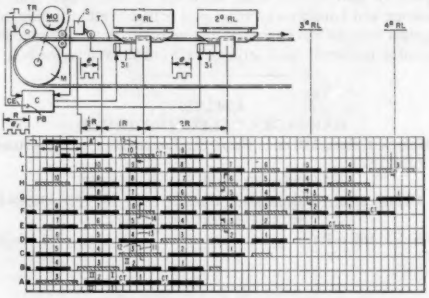
gripper means mounted to said transfer carriage, said gripper means being operable to grip said printed stock on the printing bed at said takeoff position, and to release said printed stock face-up on a row of said wickets beneath said transfer carriage at said delivery position, whereby said row of wickets move upwardly from beneath said transfer carriage at said delivery position without contacting said support arm toward the upper surface of said dryer for drying said printed stock.

4,242,957

PROCESS AND APPARATUS FOR THE PRINTING OF SPONGE-CLOTHS AND THE LIKE

Umberto Mascioni, Azzio; Adolfo Giani, Bergamo, and Mario Panseri, Ranica, all of Italy, assignors to Reggiani S.p.A., Bergamo, Italy

Filed Jul. 17, 1978, Ser. No. 925,198
Claims priority, application Italy, Jul. 19, 1977, 25881 A/77
Int. Cl.³ B41L *13/02;* **B41N** *1/24*
U.S. Cl. 101—126 **13 Claims**



1. Apparatus for effecting an automatic multi-color printing process for sponge-cloths with contiguous ends or continuous textile bands of stretch-yarn fabrics and the like, characterized in that there is provided a conventional flat-screen printing machine comprising:

an electrical impulse generating device produced impulses in a quantity proportional to the length of the print repeat, synchronized with the carrying belt of the machine and electrically connected to an electronic computer-programmer for controlling and actuating in a sequential way the individual printing unit;

a device for reading and detecting the differences in length of the sponge-cloths advancing on the carrying belt, comprising at least one electromechanical, photoelectrical sensor, mounted adjustably lengthwise and with respect to the width of the printing plane, and arranged to actuate said programmer to effect the shiftings of the printing units in a position centered on the sponge-cloths, and effect the printing operation on said sponge-cloths;

a control device for effecting traverse motion of the printing unit along the printing plane and partial rotation with respect to the printing plane, comprising:

a carriage for each printing unit, said carriage being held by two guide slides, two racks connected to each side of said carriage, each of said racks engaged with first and second pinions;

first and second stepping motors for driving each of said pinions in response to a pulse applied to each motor;

means connecting said stepping motors to said computer-programmer, whereby the position of said printing units with respect to said printing plane is controlled by said computer-programmer;

mechanical adjustment means provided on each side of said printing unit for initially positioning said printing unit; and

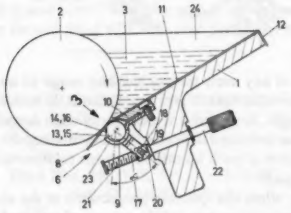
means for rotating said printing units with respect to said printing plane comprising a partially spherical hinge located on each side of said carriage, connected to said printing unit permitting pivoting of said pivot unit with respect to said carriage.

4,242,958

INK DUCT FOR OFFSET OR RELIEF PRINTING MACHINES

Willi Jeschke, Heidelberg, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 845,370, Oct. 25, 1977, abandoned.
This application Apr. 23, 1979, Ser. No. 32,412
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1976, 2648098
Int. Cl.³ B41F *31/04;* B41L *27/06, 27/08*
U.S. Cl. 101—365 10 Claims



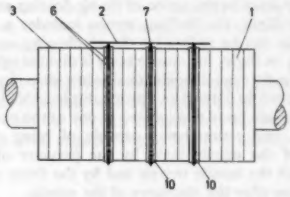
1. Ink duct for printing machines provided with a doctor roller, the ink duct having an ink metering device adjustable with respect to the doctor roller for varying an ink gap therebetween and thereby thickness of ink receivable in said variable ink gap, the ink metering device comprising adjusting means for varyingly adjusting the gap zonewise between the ink metering device and the doctor roller, said adjusting means being formed with respective bracing regions at which said adjusting means are braced against the doctor roller and respective metering regions at which a variable metering gap is defined thereby with the doctor roller, said bracing regions and said metering regions being located adjacent one another in a plurality of respective zones disposed in axial direction of the doctor roller, and respective means for resiliently biasing said adjusting means continuously into a contact relationship with the doctor roller at said bracing regions and for adjustably varying a spacing of said adjusting means from said doctor roller at said metering regions so that the respective spacing of the respective metering regions from the doctor roller determines the ink gap in each of the respective zones, said adjusting means comprising a plurality of adjusting elements of substantially cylindrical construction rotatable in peripheral direction thereof, the respective bracing regions being narrow with respect to the width of the respective metering regions, and the respective metering regions being formed by eccentric tapped grooves located adjacent the respective bracing regions, said ink metering device including zonewise subdivided pressure strips, said resilient biasing means supportingly biasing said pressure strips toward the doctor roller, said pressure strips being formed with a recess in a forward region thereof wherein said cylindrical adjusting elements are received, said adjusting means further including an elastic foil fixed to said ink metering device and covering said pressure strips and said adjusting elements, the respective bracing regions being biased by said resilient biasing means into indirect contact with the doctor roller through the intermediary of said elastic foil.

4,242,959

SHEET CARRIER

Willi Jeschke, Heidelberg, and Peter W. Gögele, Rauenberg, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Mar. 26, 1979, Ser. No. 24,011
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813136
Int. Cl.³ B41L *21/00;* B41F *21/00*
U.S. Cl. 101—420 3 Claims



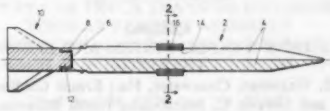
1. Sheet carrier device disposed so as to be axially adjustable on a transfer drum in a multicolor rotary printing machine and having axially shiftable carriers extending in circumferential direction on the casing of the drum, sheet carrier elements being interchangeably mounted on the carriers and adjustably displaceable in circumferential direction of the drum, the sheet carrier elements having supporting edges whereon a sheet being carried is supportable in a given working position of the sheet carrier elements, comprising lines disposed circumferentially on the transfer drum and having a hook at leastat one end thereof for hooking said lines into the drum casing, the sheet carrier elements being formed with respective bores through which the sheet carrier elements are threaded on said lines, said sheet carrier elements having a square cross section concentric to said bores formed therein, respectively, and having the respective supporting edge thereof projecting from said square cross section, said carriers, respectively, comprising a guide band mounted on the casing surface of the transfer drum and shiftable in axial direction thereof, said sheet carrier elements being disposed on said guide band so as to be pivotable through 90° into and out of said given working position thereof.

4,242,960

AUTOMATICALLY DISINTEGRATING MISSILE

Dieter Boeder; Christian Jaeneke, both of Duesseldorf; Rudolf Romer, Kaarst, and Guenter Sikorski, Duesseldorf, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,182
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756420
Int. Cl.³ F42B *13/20, 13/18*
U.S. Cl. 102—92.7 15 Claims



1. A missile having a tip and a tail end, which automatically disintegrates after attaining a predetermined flight time, comprising a missile body formed of at least two parts, a sleeve coaxially mounted with respect to the missile on said two parts thereby gripping said parts and holding them together, said sleeve being formed of a material which softens or melts as a result of the increase of temperature caused by the air flowing around the missile during its flight, at least two parts being

formed as identical sector-shaped parts in a longitudinal direction, such parts of the missile body forming a recess at the tail end of the missile, wing tail unit having a stud received and held within the recess, and an annular groove encircling the missile body in a central zone thereof, the sleeve for securing the missile body parts together being disposed in said annular groove.

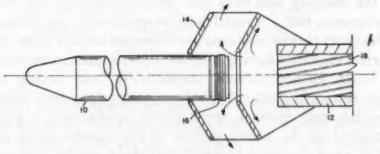
6. A missile which automatically disintegrates after attaining a predetermined flight time, comprising a missile body formed of a plurality of parts, a locking means for positively locking said missile body parts to one another, the locking means being mounted on the missile body and being releasable after a predetermined time delay by the action of the air flowing around the missile in its flight, the locking means includes a securing element which can be shifted by the air flowing around the missile during its flight, the missile body is divided into at least two longitudinally extending identical sector-shaped parts, and the securing element comprises a piston displaceable longitudinally of the missile body and located in one of the parts of the missile body, said piston being capable of being displaced rearwardly of the missile body by the pressure of the air through which the missile travels and by the force of inertia upon the piston after the discharge of the missile.

4,242,961

CHEVRON GROOVED DECOUPLING OBTURATOR

Jerry L. Moredock; James E. Wagner, and Jonnie O. Hyder, all of Orlando, Fla., assignors to Martin Marietta Corporation, Orlando, Fla.

Filed Oct. 23, 1978, Ser. No. 953,731
Int. Cl.³ F42B *31/00*
U.S. Cl. 102—93 **4 Claims**



1. An obturator for a projectile to be fired from a barrel having rifling, which obturator is mounted on the projectile in such a way as to permit slippage such that the projectile will be caused to rotate at only a fraction of the rotational speed it would otherwise have attained, said obturator comprising a ring of non-metallic material, which ring is capable of mounting on a circular body portion of the projectile, an external portion of said obturator ring having a plurality of encircling slots, essentially parallel to each other, which slots are rearwardly inclined so as to define a plurality of chevron-like members designed to forcibly engage the rifling of the barrel, the interior of said ring being designed to slip rotationally with respect to the projectile body portion as the projectile travels along the barrel, thus enabling the rotation of the projectile as a result of rifling effects to be minimized.

4,242,962

ANTITANK WEAPON SYSTEM AND ELEMENTS THEREFOR

David R. Wakeman, Clearwater, Fla.; Ernest Goldberg, Westford, and Gordon C. MacKenzie, North Billerica, both of Mass., assignors to Raytheon Company, Lexington, Mass.

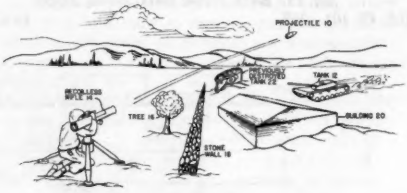
Filed Jan. 2, 1979, Ser. No. 303
Int. Cl.³ F42C *13/02*
U.S. Cl. 102—213 **2 Claims**

1. An antitank weapon system wherein a spinning projectile carrying submunitions is fired toward an aiming point above a tank intended to be struck from above by such submunitions, such system comprising:

(a) a plurality of pulsed laser radars in the spinning projectile, each one of such lasers being disposed successively to illuminate swaths of the underlying terrain ahead of the projectile in flight;

(b) means for actuating each one of the plurality of pulsed laser radars when each is oriented to illuminate one of the swaths;

(c) means for first processing returns from successively illuminated swaths to determine the height of any illuminated targets above the underlying terrain, the length and



width of any such targets and the range of any such targets from the spinning projectile, and, in accordance with the height, length and width of any such targets, identifying returns from a tank and then calculating the position of the source of such identified returns relative to the aiming point; and

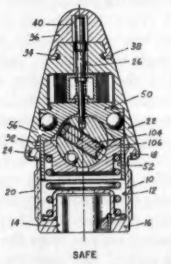
(d) firing, when the spinning projectile is at the aiming point, the submunitions toward the source of returns identified as from a tank to impact on the upper surface of the identified tank.

4,242,963

DELAYED ARMING FUZE FOR A SPINNING PROJECTILE

Richard T. Ziemba, Burlington, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Sep. 25, 1978, Ser. No. 945,679
Int. Cl.³ F42C *15/76, 15/22*
U.S. Cl. 102—236 **3 Claims**



1. A time delay fuze having a safed configuration and an armed configuration, for spinning projectiles, comprising:

a housing having a first longitudinal axis and a longitudinal bore therein;

a rotor carrier journaled in said bore of said housing for reciprocation along said first longitudinal axis between an aftmost station and a forwardmost station, and having a cavity therein;

a firing pin journaled in said bore of said housing for reciprocation along said first longitudinal axis between an aftmost station and a forwardmost station;

a rotor disposed in said cavity of said carrier and journaled for rotation about a second axis which is perpendicular to said first longitudinal axis, and having a detonator which is disposed along a diametral third axis of said rotor which is perpendicular to said second axis;

first means including a split collar which is integral with said rotor carrier and an unwinding ribbon for normally interlocking said firing pin to said rotor carrier and to said rotor with said rotor third axis at an angle to said first axis, and upon the continued application of spin, for releasing said firing pin from said rotor carrier and said rotor,

second means for biasing said firing pin, when released, out of interlock with said rotor,

third means for normally biasing said rotor carrier towards said forwardmost station,

fourth means, upon the application of setback force, and thereby the displacement of said rotor carrier to said aftmost station, and during the application of centrifugal force, for retaining said rotor carrier in said aftmost station, and

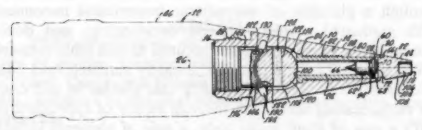
fifth means for normally locking said rotor against rotation in said rotor carrier with said third axis at an angle to said first axis, and upon the application of centrifugal force, for unlocking said rotor, whereby said rotor is free to rotate to align its said third axis with said first longitudinal axis.

4,242,964

EXPLOSIVE FUSE FOR PROJECTILE

John B. Warren, Tustin; Ernest Y. Robinson, Altadena, and Robert P. Kazanjy, Irvine, all of Calif., assignors to Ares, Inc., Port Clinton, Ohio

Filed Dec. 18, 1978, Ser. No. 970,760
Int. Cl.³ F42C 1/02
U.S. Cl. 102—275 **16 Claims**



1. A percussion fuse for a high explosive projectile, comprising:

a fuse body including means defining a cavity opening from a rearward end thereof, and extending forwardly, generally along a longitudinal body axis and terminating at an end wall rearwardly of the forward end of the fuse body;

said body also including means defining a weakened region near said forward end, and adjacent to and forwardly of said wall;

said weakened region being open to an exterior surface of the body to thereby define a forward tip portion and being configured to shear upon impact of said tip portion with a target, thereby enabling at least partial rearward penetration of the tip portion into the cavity; and,

means disposed within said cavity for causing detonation of an explosive projectile for which the fuse is connected in response to said partial cavity penetration by the tip portion.

4,242,965

CARRIER CONVEYOR

Alfred Granet, 7, Rue de Clos de Laroche, 86000 Poitiers, France

Filed Feb. 15, 1979, Ser. No. 12,604
Claims priority, application France, Feb. 17, 1978, 78 04602
Int. Cl.³ B65G 17/00
U.S. Cl. 104—96 **11 Claims**

1. A carrier conveyor comprising:

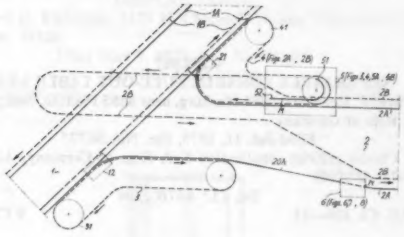
a main runway including a main chain to which are secured stationary lugs for continuously driving carriers on said main runway;

a bidirectional secondary runway including a secondary chain to which are secured stationary lugs for continuously driving carriers on said secondary runway;

a first auxiliary runway including a first auxiliary chain arranged to be moved in synchronism with said main chain and having retractable lugs for driving carriers from a waiting position of said secondary runway to said main runway, said first auxiliary runway further including lug returning means for each lug of said first auxiliary chain, said lug member having a returning spring to being the lug into an engaged position for driving the carrier;

a second auxiliary runway including a second auxiliary chain arranged to be moved in synchronism with said main chain and having lugs for driving carriers from said main runway to a stop position on said second auxiliary runway which stop position is located upstream of said secondary runway;

a first electromechanical transfer means for transferring a carrier from said waiting position of said secondary runway onto the runway of said first auxiliary runway by means of an engaged lug of said first auxiliary chain, said



first electromechanical means comprising movable means located in the region of said waiting position for selectively disengaging said retractable lugs of said first auxiliary chain from the path followed by said carriers when no carrier is to be transferred from said secondary runway to said main runway wherein a retractable lug at the disengaged position is not in contact with the carriers at said waiting position;

a second electromechanical transfer means for transferring a carrier from said stop position of said second auxiliary runway to said secondary runway, said second electromechanical means comprising pivotable stopping means for stopping at a carrier previously driven by said second auxiliary chain at the stop position; and

said second electromechanical transfer means further comprising a retractable slidable means which is in the path followed by the carrier upstream of said stop position, said retractable slidable means being effective to push a stop carrier into said secondary runway between two stationary lugs on said secondary chain while simultaneously disengaging said pivotable stopping means.

4,242,966

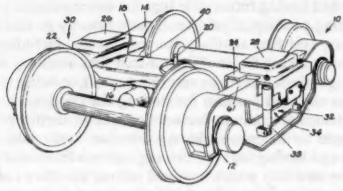
RAILWAY CAR TRUCK TRANSOM INCLUDING A TUBULAR BEARING ASSEMBLY

Jan D. Holt, St. Charles, and Robert K. Neff, St. Louis, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Apr. 26, 1979, Ser. No. 33,647
Int. Cl.³ B61F 3/08, 5/06, 5/08, 5/14
U.S. Cl. 105—182 R **9 Claims**

1. A single transom for a railway car truck comprising: a pair of tubes rigidly connected respectively to a pair of longitudinally extending side frames; said tubes being longitudinally and vertically aligned, and located below a bolster which extends between the side frames above the transom; a bearing rigidly attached to one of the tubes; said bearing extending within the other of the tubes; a layer of low friction material located

between said bearing and said other tube to allow the side frames to rock in a vertical plane about a transverse axis as vertical undulations in the track are traversed; said transom



having sufficient rigidity to resist the tendency for the side frames to move longitudinally with respect to each other, whereby said truck is maintained in tram.

4,242,967

SEPARATELY USEABLE PULL-OUT TABLE LEAF

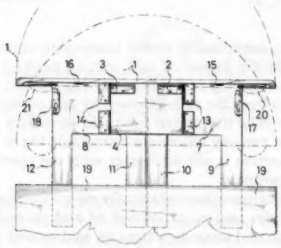
Xaver F. Leonhart, 8381 Harburg, near 8385 Pilsting, Ndb., Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,727

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1978, 2834469

Int. Cl.³ A47B *1/04*

U.S. Cl. 108—11 **9 Claims**



1. An extension table pull-out and separable table end leaf comprising, an end leaf body portion (1) having a table mating edge, two U-shaped supports (7,8) the legs (9–12) of which are adapted to form the legs of a table with four legs, a rectangular body portion (4) having end and side edges, first hinge means (2,3) connecting the end edge of said rectangular body portion (4) to the bottom of said end leaf body portion at the center of gravity thereof, said end leaf body portion (1) adapted to move about said first hinge means from a position substantially parallel with said rectangular body portion to a position normal thereto, second hinge means (13,14) connecting the side edges of said rectangular body portion (4) to said U-shaped supports (7,8), said U-shaped supports connected to move about said second hinge means (13,14) from positions in the same plane to extended positions at acute angles with said rectangular body portion, catch means (15,16) connected on the bottom of said end leaf body portion (1), latch means (17,18) on said U-shaped supports engageable with said catch means (15,16) to hold said U-shaped supports in the extended positions, and the legs (9–12) of said U-shaped supports (7,8) when in said same plane extending beyond the table mating edge of said end leaf body portion (1) when the latter is positioned parallel with said rectangular body portion (4) whereby said legs form slide connections with an extension table.

4,242,968

STEPPING ADVANCING DEVICE ADAPTED FOR USE WITH COMPONENT SUPPORT TABLES AND OTHER PURPOSES

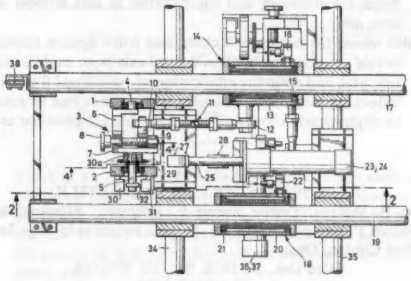
Hubert Schaidl, Kochel am See, and Josef Leingärtner, Bad Heilbrunn, both of Fed. Rep. of Germany, assignors to Dorst-Keramikmaschinen-Bau Otto Dorst und Dipl.-Ing. Walter Schlegel, Kochel am See, Fed. Rep. of Germany

Filed Oct. 12, 1977, Ser. No. 841,370

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1976, 2646465

Int. Cl.³ A47B *11/00, 85/00*; F16C *5/00*

U.S. Cl. 108—20 **6 Claims**



1. A device for high speed accurate positioning of a table through a plurality of intermittent incremental movements with graduated acceleration and deceleration, said device comprising: a crank and means secured to said table rotatably mounting said crank; a pair of alternately actuated fluid operated pistons and means connecting said pistons to said crank for reciprocating said crank through an arc of approximately 180°; a pair of fixed guide rods; a pair of elements slidably mounted, one on each of said rods; one of said elements being secured to the table; rod means having one end eccentrically connected to said crank and its other end connected to the other of said elements; a pair of sensors mounted to be alternately actuated by said crank at the opposite ends of its rotational movement; each of elements having a clamp for engaging said guide rods; means connected to said sensors for alternately operating said clamps in coordination with said pistons with the clamp of one of said elements being actuated while the crank is rotating in one direction and the clamp of the other of said elements being actuated while the crank is rotating in the opposite direction to effect incremental movement of said table; the chord of the arc of rotation of said crank being parallel to the surface of said table whereby the rate of lineal movement of the table has a sine wave pattern.

4,242,969

TABLE AND SHELF ASSEMBLY

Andrew R. Checkwood, 18379 Lake Encino Dr., Encino, Calif. 91316, and Andrew M. Checkwood, 9438 Trebert Pl., Tujunga, Calif. 91042, assignors to Andrew R. Checkwood; Andrew M. Checkwood and Larry Checkwood, all of Sun Valley, Calif.

Filed Feb. 21, 1979, Ser. No. 13,212

Int. Cl.³ A47B *3/06*; F16D *1/00*

U.S. Cl. 108—153 **6 Claims**

1. A table comprising a plurality of unperforated tube members for defining a peripheral framework;

a plurality of corner members each including a central body portion and at least two arms extending angularly with respect to each other and each in telescoping relationship with adjacent tube members thereby defining a junction of said framework;

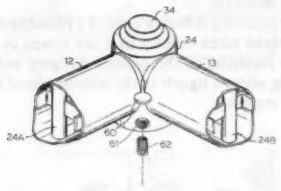
each of said arms defining at least one edge recess at a prede-

termined distance from said central body portion and adjacent to the interior of the wall of said tube member;

said tubular members and respective arms in dimpled interlocking staked relationship with each other at said recess;

the body portion of said corner member including a shelf support;

said body portion of said corner members defining a connecting member for receiving legs in an orthogonal relationship with at least one of said arms



wherein said arms are generally in cruciform shape with the extremities thereof matching the inside dimension of the tube member whereby said tube member and arms assume a generally rigid interconnection when telescoped; and

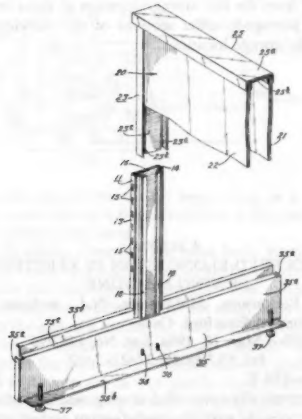
wherein at least one of said cruciform portions of said arms extends in the direction downward when said table is in a normal position and said recess defined by said arm is at the underside of said arm whereby the dimpled connection between the arm and the tube is virtually invisible in normal use of the table.

4,242,970

FREE-STANDING ARTICLE SUPPORT UNIT

James M. Suttles, Elberton; Terry L. Norton, Royston; Joseph P. Hart, Canon, and Thomas C. Jordan, III, Royston, all of Ga., assignors to Royston Manufacturing Corporation, Royston, Ga.

Filed Jun. 27, 1979, Ser. No. 52,811
Int. Cl.³ A47F *5/00*
U.S. Cl. 108—159 **13 Claims**



1. A free-standing article support comprising:

a pair of vertically-disposed uprights, each having a pair of outwardly-offset flanges terminating in spaced confronting relation to form a slotted tongue;

a panel assembly having a pair of edge members, each formed into a groove for matingly receiving the slotted tongues of the respective uprights to mount said uprights and panel assembly in a common plane;

a clip mounted to each edge of said panel assembly adjacent its upper end for engaging in said slotted tongue and behind said flanges upon downward movement of said panel assembly;

a base member extending laterally from the bottom of each upright;

a lower shelf spanning across the tops of said base members;

a kickplate extending across the ends of said base members; and

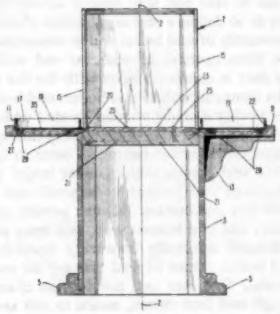
means on said kickplate and said base members for securing said kickplate to said base members upon downward movement of said kickplate.

4,242,971

DISPLAY TABLE

Edward B. Kleinman, 1675 E. Churchill Downs, Germantown, Tenn. 38138

Filed May 7, 1979, Ser. No. 36,651
Int. Cl.³ A47B *85/00*
U.S. Cl. 108—26 **22 Claims**



1. A merchandise display table for enabling dispensing of eyeglass frames and the like and for enabling plural customers to simultaneously select and view a plurality of frames located on the table comprising:

pedestal means;

mirror means vertically disposed atop said pedestal means, said mirror means including a plurality of faces arranged in a generally circular array;

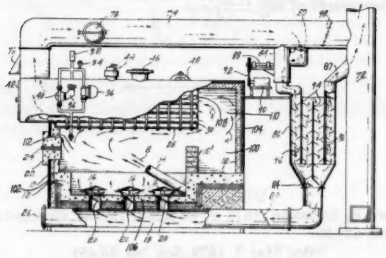
an annular platform fixedly disposed about said mirror means and an upper portion of said pedestal means, said platform including grooved annular track means formed thereon, said platform being disposed to define a plurality of customer seating stations, said platform including a display space extending beyond the grooved annular track means and on which selected frames and optical instruments can be placed; and

an annular display tray member disposed within the area defined by said track means so that the tray member is captured by sides of the grooved track means, said tray member arranged for rotation about said annular platform, said annular tray member having a plurality of compartments for displaying the eyeglass frames.

4,242,972
COMBUSTION SYSTEM WITH PARTIAL RECIRCULATION OF EXHAUST GASES AND FEED MECHANISM THEREFOR

Guy Sicard, 4, rue Coursol, Neufchatel, Quebec, G2B 2H5, Canada

Filed Dec. 22, 1978, Ser. No. 972,332
Int. Cl.³ F23B 7/00
U.S. Cl. 110—234 **5 Claims**



1. A combustion system comprising a generally rectangular combustion chamber having side walls, front and back end walls, a bottom wall and a top wall, a fire tube boiler horizontally disposed in the top portion of said combustion chamber and which has its rear end wall spaced forwardly from said back wall, so as to define a rear combustion chamber portion disposed rearwardly of said boiler and in communication with the fire tube inlets opening at said rear end wall of of said boiler, a flue duct in communication with the fire tube outlets opening at the front end wall of said boiler, said boiler combustion chamber having a major portion located underneath said boiler, a particulate fuel feed conduit passing through a wall of said combustion chamber and having an inner straight portion exposed within said combustion chamber major portion and having a discharge end located underneath said boiler forwardly of said rear combustion chamber portion and intermediate said boiler and said bottom wall, said inner straight portion being directed upwardly forwardly towards said front wall and said boiler, means to feed primary air and means to throw particulate fuel into said combustion chamber major portion through said feed circuit, means to mix secondary air with the exhaust gases in said flue duct, means to separate suspended particles in the mixture of secondary air and exhaust gases in said flue duct, means to recirculate the separated particles and a portion of said mixture back into the combustion chamber, said last-named means including several inlets in said bottom wall of said combustion chamber, and means to discharge the remaining portion of said mixture into the atmosphere, said remaining portion being substantially free of suspended particles.

4,242,973
SEWING MACHINE WITH ELECTRONIC PATTERNING SYSTEM

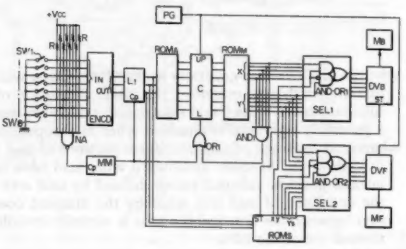
Hachiro Makabe, Fussa; Kazuo Watanabe; Hideaki Takenoya, both of Hachioji; Toshihide Kakinuma, Tokyo, and Toshiaki Kume, Tachikawa, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 926,627, Jul. 20, 1978, abandoned, which is a continuation-in-part of Ser. No. 876,326, Feb. 8, 1978, which is a continuation of Ser. No. 715,691, Aug. 19, 1976, Pat. No. 4,086,862. This application Sep. 28, 1979, Ser. No. 80,072
Claims priority, application Japan, Oct. 17, 1975, 50-124306
Int. Cl.³ D05B 3/02
U.S. Cl. 112—158 E **3 Claims**

1. In a sewing machine of the type provided with electromechanical stitch-forming means responding to stitch-control data by changing the relative positions of the needle of the machine and the fabric being sewn on the machine, in combination,

a main pattern memory containing a plurality of individually addressable storage locations and having stitch-control data outputs and address-signal inputs and operative for transmitting to the data outputs the data stored in whatever addressable storage location is addressed by an address signal applied to the address-signal inputs of the pattern memory;

means for selecting differing ones of a plurality of stitch-patterns whose stitch-control data are stored in addressable storage locations of the pattern memory and means for applying address signals to the address-signal inputs of the pattern memory,



at least some of the individually addressable storage locations of the memory each comprising a first storage-location section storing stitch-control data pertaining to one stitch of a pattern but also comprising a second storage-location section storing stitch-control data pertaining to a different stitch, the first storage-location section and the second storage-location section of each such storage location not being addressable separately from each other,

and means operative for applying to the electromechanical stitch-forming means stitch-control data alternatively derived from the first storage-location sections or else the second storage-location sections of the individually addressable storage locations.

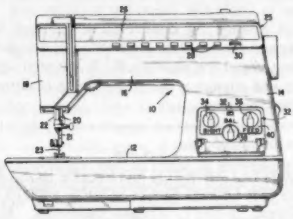
4,242,974
PATTERN FEED ELONGATION IN ELECTRONIC SEWING MACHINE

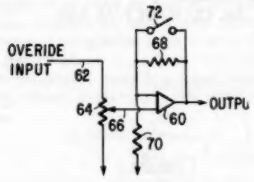
Howard L. Beckerman, Middletown, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 10, 1980, Ser. No. 128,996
Int. Cl.³ D05B 27/22, 3/02
U.S. Cl. 112—158 E **3 Claims**

1. An electronically controlled sewing machine comprising a frame, a selectively variable work feeding system supported in said frame, an endwise reciprocating and selectively laterally jogging needle bar supported in said frame, said needle bar terminating in a sewing needle, a solid state memory, means for receiving and converting information from said solid state memory to effect selective lateral jogging of said needle bar and selective variation of said work feeding system, means for obtaining continuous feed length change of the work feeding information received from the solid state memory from 0 to the maximum stored therein, means for achieving additional feed

steps between needle penetrations for feed multiplication, and means for combining said obtaining means with said achieving





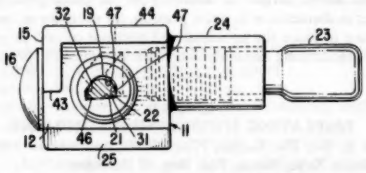
means to obtain a continuous change in said feed length from 0 to the maximum multiplication thereof.

4,242,975

NEEDLE SUPPORT MEANS

Warren D. Knowles, Clark, and Lionel J. Coulombe, Matawan, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Jan. 22, 1980, Ser. No. 114,165
Int. Cl.[3] D05B *55/02*
U.S. Cl. 112—226 **7 Claims**



1. Needle support means for supporting, in a sewing machine, a needle having a shank including a flat slab surface, the support means comprising:

a needle clamp comprising a main body portion having a needle-receiving end and a needle bar-receiving end, the needle bar-receiving end having a first cylindrical recess extending longitudinally into the main body portion to fit onto the end of a needle bar, and the needle-receiving end having a needle channel that extends longitudinally through the main body portion from the needle-receiving end to the recess in the needle bar-receiving end, the needle channel being defined by surfaces extending longitudinally into the main body portion and comprising a first flat surface in a first longitudinal plane, a second flat surface in a second longitudinal plane at an acute angle to the first flat surface, and a cylindrical surface segment joining distal edges of the first and second flat surfaces, the radius of curvature of the cylindrical segment being greater than the radius of curvature of the standard sewing machine needle but less than a radius that would permit the shank of the smallest sewing machine needle that is to be used in the needle bar clamp to be inserted into the needle channel in any orientation other than with the flat slab surface of the needle shank in flat surface-to-surface contact with the first flat surface of the needle channel;

a hole in the needle bar-receiving end of the needle extending transversely with respect to the axial direction of the needle bar recess;

a first screw extending through the transverse hole to be threaded into a hole aligned therewith near the end of the needle bar to hold the needle clamp on the end of the needle bar; and

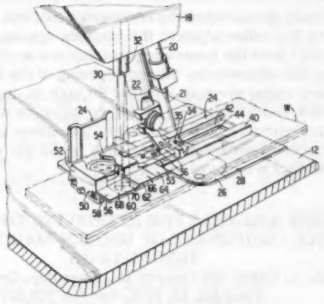
a side lug extending from one side of the main body portion of the needle clamp and having an internal thread along part of its length to receive a needle-holding second screw threaded into the side lug and comprising a conical point engaging a curved portion of the needle shank to press the needle shank against both the first and second flat surfaces of the needle channel.

4,242,976

PRECISE POSITIONER OF BUTTONHOLE PRESSER FOOT

Howard L. Beckerman, Middletown; Russell J. Pepe, Piscataway, and Allan M. Dob, Clifton, all of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Feb. 29, 1980, Ser. No. 126,087
Int. Cl.[3] D05B *3/06*
U.S. Cl. 112—264.1 **1 Claim**



1. A method of initiating the stitching of a buttonhole by a zig zag sewing machine having means for selectively reversible work material feeding, and a buttonhole presser device having a sliding portion for travelling with a work material during the formation of a buttonhole, said sliding portion of said presser device having an initial position from which actuation of said buttonhole is initiated, which method comprises the steps of:

a. sensing the position of the sliding portion of the buttonhole presser device;

b. determining whether the sliding portion of the buttonhole presser device is in the correct initial position for buttonholing; and,

c. initiating corrective feed action if the sliding portion of the buttonhole presser device is not in the correct initial position, to move the same to the correct initial position.

4,242,977

ANCHOR GUIDE

George W. Long, 23241 Collins St., Woodland Hills, Calif. 91364

Filed Apr. 20, 1978, Ser. No. 898,148
Int. Cl.[2] B63B *21/22*
U.S. Cl. 114—210 **30 Claims**

1. An anchor guide comprising:

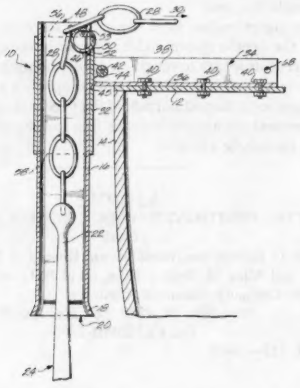
an elongated tube for receiving the shank of an anchor

secured to a tension line passing through an entrance opening at one end of the tube;

a bracket for being mounted adjacent an edge of a boat deck;

an elongated collar disposed around the tube so that the tube is confined within the collar and is slidable lengthwise relative to the collar; and

means hinging the collar to the bracket for allowing the collar to pivot relative to the bracket about an axis transverse to the length of the collar, the length of the collar



being greater from the transverse pivot axis to a first end of the collar adjacent the entrance opening of the tube than from the transverse pivot axis to a second end of the collar opposite the entrance opening of the tube, the tube and collar pivoting together through an angle while the tube slides lengthwise relative to the collar so as to reduce the amount of force applied to the tension line to lift the anchor onboard the boat deck when the shank of the anchor is received in the tube.

4,242,978

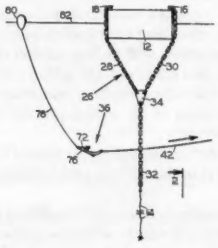
HOOK ASSEMBLY FOR RETRIEVING THE CHAIN BRIDLE COMPONENT OF BROKEN MARINE VESSEL TOWING LINES

Orville A. Fuller, 995 Oakway Dr., Coos Bay, Oreg. 97420

Filed Jul. 17, 1978, Ser. No. 925,457

Int. Cl.[3] B63B *21/04*

U.S. Cl. 114—253 **4 Claims**



4. A hook assembly for retrieving the chain bridle component of a broken marine vessel towing line, the hook assembly comprising:

(a) a hook member having an insertion slot dimensioned to receive flatwise therein a link of the chain bridle component of the towing line,

(b) a float member,

(c) a float tow line interconnecting the hook and float members and dimensioned to maintain the hook member a distance below the surface of the water predetermined to intercept the vertically depending chain bridle, the float tow line including a pair of bridle lines connected to the hook member for orienting the insertion slot of the hook member in chain link receiving position, and

(d) a hook towing line connected at one end to the hook member and arranged for connection at its opposite end to a towing vessel for moving the hook member for intercepting and engaging the chain bridle component of the vessel towing line.

4,242,979

SCREW PROPELLER WITH NO SHAFT BOSS AND SHIP THRUSTER USING SUCH SCREW PROPELLER

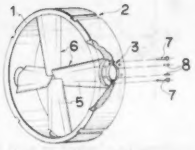
Kiyoshi Shima, 1-10-17 Tsujido-Shinmachi, Fujisawa-shi, Kanagawa-ken, Japan

Filed Oct. 27, 1978, Ser. No. 955,324

Claims priority, application Japan, Nov. 9, 1977, 52-134332; Nov. 30, 1977, 52-160643[U]

Int. Cl.[3] B63H *1/14, 5/06*

U.S. Cl. 440—38 **4 Claims**



1. A ship thruster device comprising a rotatable cylinder disposed in a suction and exhaust hole in the hull of a ship, a plurality of propeller blades are removably secured to said cylinder and are inclined a predetermined angle from the vertical plane to the center axis of said cylinder, and said blades extending radially from the inner periphery of said cylinder to a point close to the center thereof, said cylinder including a gear about its periphery connected to a motor through a power transmitting means; and said cylinder having a plurality of stepped holes, larger in diameter at its inner portion and smaller in diameter at its outer portion, for securely seating and retaining in place the proximal end portions of said propellers and for facilitating assembly and replacement of the propellers.

4,242,980

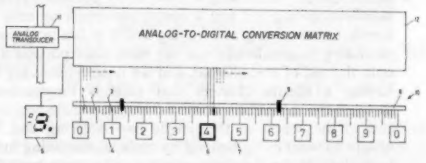
DISPLAYING MEASURING INSTRUMENT

Thiam L. Go, The Hague, Netherlands, assignor to Friedrich Wilhelm Zube, Nidda, Fed. Rep. of Germany

Filed Feb. 10, 1978, Ser. No. 876,699

Int. Cl.[3] G08B *5/36;* G09F *9/00*

U.S. Cl. 116—202 **3 Claims**



1. Displaying measuring instrument in which a measured value of a quantity is displayed by a selective change of illumination state of predetermined visual display elements arranged in a display panel, comprising a plurality of discrete display elements, each element having more than one illumination state and each element adapted to change its illumination state to illuminate from within said element upon energization, at least some of which display elements of the display panel being

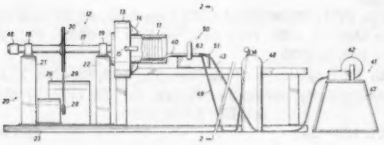
arranged in a straight line, each of which said display elements arranged in a straight line representing a uniform, discrete measured quantity from the next nearest display element in the straight line, and means successively changing the illumination state of said display elements to correspond to a new measured value when said measured value is changed to said new measured value, wherein each of said visual display elements comprises a shape selected from one of a first shape and a second shape, wherein said first shape is distinguishably different from said second shape, and wherein the display elements arranged in a straight line, periodic ones of said display elements comprise said second shape, and all other of said display elements comprise said first shape, said visual display elements comprised of said second shape being further comprised of an alphanumeric indication arranged in a closed border around said alphanumeric indication, the alphanumeric indication and the closed border changing its illumination state upon energization, said measuring instrument further comprising at least one tab supported in close proximity to said straight line of visual display elements on said display panel, and moveable linearly along said straight line so as to be in close proximity to said visual display elements, each tab comprising a light-sensitive element adapted to provide a signal when the visual display element nearest to said tab is energized and is illuminated from within.

4,242,981

APPARATUS FOR REBUILDING CYLINDRICAL OBJECTS

Philippe G. Bernard, and Jack E. Bunn, both of P.O. Box 10086, Station 1, Houma, La. 70361

Filed May 25, 1979, Ser. No. 42,570
Int. Cl.³ B05C *11/00*
U.S. Cl. 118—47 **9 Claims**



1. Apparatus for depositing material on the interior surface of a cylindrical workpiece which comprises:

a mandrel having an axis of rotation;

means for supporting said workpiece coaxially with said mandrel for rotation therewith;

a wire-fed welding torch positionable on the interior of said workpiece adjacent to said interior surface of said workpiece;

means for moving said welding torch axially with respect to said workpiece, said axially-moving means including a carriage connected to said welding torch for movement therewith and electric means for moving said carriage axially with respect to said workpiece;

switch means for energizing said electric moving means;

and means on said mandrel for operating said switch means to move said welding torch.

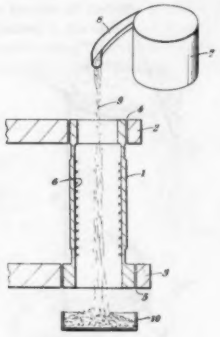
4,242,982

APPARATUS FOR METAL COATING OF POWDERS

Miles P. Drake, and Sarah Y. Hughes, both of Harlow, England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 16, 1979, Ser. No. 39,625
Claims priority, application United Kingdom, May 25, 1978, 22454/78
Int. Cl.³ B05D *7/00*
U.S. Cl. 118—716 **10 Claims**

1. Apparatus for coating powdered or granular material with metal films in a vacuum chamber which comprises means for creating a free flowing stream of the material to be coated falling through the central portion of the chamber, a body of refractory material having a vertical face positioned in the central part of the chamber such that the falling stream of material falls adjacent the vertical face of the body, the vertical face having its surface covered with a layer of the metal to be



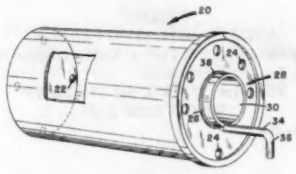
deposited on the particles of material in the falling stream, and means disposed adjacent opposite ends of the body for heating the body to a temperature sufficient to raise the vapor pressure of the metal covering to cause evaporation of the metal while the stream of material falls past the face under vacuum conditions.

4,242,983

BIRD NESTING BOX FORMED OF A DISPOSABLE STORAGE CONTAINER

Michael R. P. Moore, 11724 Lovejoy, Silver Spring, Md. 20902

Division of Ser. No. 789,347, Apr. 21, 1977, Pat. No. 4,166,432. This application May 30, 1979, Ser. No. 43,904
Int. Cl.³ A01K *31/00*
U.S. Cl. 119—23 **8 Claims**



1. A bird nesting box formed of a substantially cylindrical storage container for holding granular material, comprising:

a housing formed from the storage container and having an open end sealable by means of a snap-fit lid having pre-stressed portions which are removable from the lid;

a removable cover disposed over the open end of the housing, the removable cover being formed from the snap-fit lid, the cover having an access opening formed therein on removal of said pre-stressed portions, the access opening having ridgeless perimetric surfaces formed about the periphery thereof;

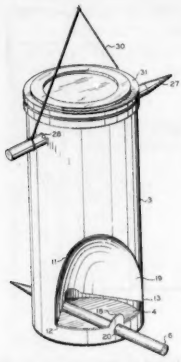
a hollow channel member disposed in the access opening and secured therein, the hollow channel member having ridges extending from the exterior surface thereof, the ridges cooperating with the ridgeless perimetric surfaces formed about the periphery of the access opening to secure the channel member therewithin; and,

a perch member formed on the hollow channel member and extending outwardly of the container therefrom.

4,242,984
COMBINATION CONTAINER AND FEEDER

Ernest L. Smith, Kansas City, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 10, 1978, Ser. No. 904,663
Int. Cl.[3] A01K *39/00*
U.S. Cl. 119—52 R 24 Claims

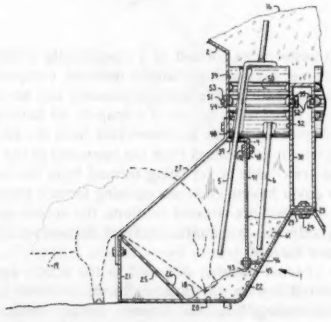


1. A combination container and feeder comprising:
a tubular side wall having a top end and a bottom end and a generally circumferentially extending first break line adjacent to and spaced from said bottom end and extending partially around said side wall and having first and second ends, said side wall having at least one generally arcuate scoreline extending from said first end toward said top end and then to said second end, said first break line and said at least one scoreline defining an invertible panel therebetween;
a bottom member secured to said bottom end and forming a container bottom; and
a top member cooperating with said side wall at said top end and forming a container top.

4,242,985
ANIMAL ACTUATED FEEDER

William D. Freeborn, Smith Center, Kans., assignor to Osborne Industries, Inc., Osborne, Kans.

Filed Apr. 23, 1979, Ser. No. 32,177
Int. Cl.[3] A01K *5/00*
U.S. Cl. 119—54 8 Claims

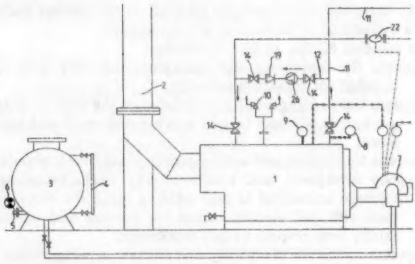


1. A demand-type animal feeder comprising:
(a) an animal feeding station;
(b) storing means for storage of feed; said storing means comprising an enclosed hopper positioned above said animal feeding station;
(c) conveying means for transferring said feed from said storage means to said feeding station; said conveying means comprising a chute attached to and communicating with a lower terminus of said hopper and terminating above said animal feeding station;
(d) demand means normally blocking transfer of said feed by said conveying means and being adapted to be operatively actuated by work of an animal to allow transfer of said feed by said conveying means; whereby said animal can selectively demand additional feed by actuating said demand means, thereby allowing additional feed to transfer from said storing means to said feeding station; said demand means comprising a rotatable cylinder and an actuator bar; said cylinder substantially forming a block in said chute and having pockets on the surface thereof suitable for holding said feed; said cylinder, being rotatably mounted about the axis thereof, such that said pockets fill with said feed from said hopper when moving upwardly and deposit said feed below said chute block when moving downwardly; said actuator bar depends from said cylinder into said feeding station, such that side to side movement of said actuator bar rotates said cylinder, thereby depositing additional feed in said chute; and
(e) dampening means for resisting actuation of said demand means by said animal in proportion to increases in the accumulation of said feed in said feeding station, whereby as the accumulation of said feed in said feeding station increases, the work of said animal to demand additional food and actuate said demand means becomes substantially greater.

4,242,986
INDEPENDENT CRYOGENIC FLUID VAPORIZATION INSTALLATION

Ermanno Bo, Ternay, France, assignor to B.B.M. S.A., Feyzin, France

PCT No. PCT/FR78/00010 § 371 Date Mar. 13, 1979, § 102(e) Date Mar. 13, 1980, PCT Pub. No. WO 79/00056, PCT Pub. Date Feb. 8, 1979
This PCT application filed Mar. 13, 1979, Ser. No. 23,194
Claims priority, application France, Jul. 22, 1977, 77 23352
Int. Cl.[3] F22B *1/02*
U.S. Cl. 122—33 18 Claims



1. A self-contained apparatus for heating a cryogenic fluid, said apparatus comprising:
(a) a container adapted to receive heating water for heating said cryogenic fluid;
(b) first heating means within said container for heating said heating water;
(c) second heating means for heating said heating water outside of said container; and
(d) recycle means for recycling said heating water from said container and either into said second heating means or back into said container, said recycle means comprising at least one perforated rack adapted to drain said heating water from said container, and means for directing said heating water from said at least one perforated rack either into said second heating means or back into said container.

4,242,987

CONNECTING ARRANGEMENT FOR A HEATING BOILER

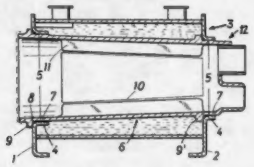
Hans Viessmann, Im Hain, 3559 Battenberg Eder, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 923,200

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1977, 2731357; Dec. 27, 1977, 2758296

Int. Cl.³ F22B 9/00

U.S. Cl. 122—44 A **13 Claims**



1. A connecting arrangement for a heating boiler of the type having a sheet-metal housing adapted for containing water and having at least front and rear sheet metal walls opposed to each other, comprising:

a first opening in said front wall;

a first sheet metal collar integral with said front wall surrounding said first opening;

a second opening in said rear wall, aligned with said first opening;

a second sheet metal collar integral with said rear wall surrounding said second opening;

an installation casting adapted for a combustion chamber and fuel gas ducts;

first and second spaced apart seating faces on said installation casting;

said first seating face being a first press fit in said first sheet metal collar;

said second seating face being a second press fit in said second sheet metal collar; and

first and second ends of said installation casting extending outward a substantial distance beyond said front and rear sheet metal walls respectively.

4,242,988

METHOD AND DEVICE FOR TRANSFERRING CONDENSATES FROM A LOW PRESSURE NETWORK INTO A HIGH PRESSURE NETWORK IN A SYSTEM OF GENERATION, DISTRIBUTION AND UTILIZATION OF CONDENSABLE VAPOR

Pierre E. Regamey, 35, Le Calabert, 69130 Ecully, France

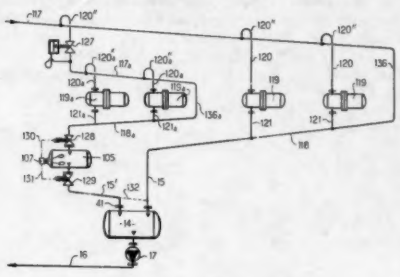
Division of Ser. No. 741,339, Nov. 12, 1976, Pat. No. 4,177,767. This application Jan. 22, 1979, Ser. No. 5,374

Claims priority, application France, Nov. 13, 1975, 75 34705; Sep. 13, 1976, 76 27510; Sep. 13, 1976, 76 27511

Int. Cl.³ F22D 5/30

U.S. Cl. 122—458 **3 Claims**

1. In a method for the discharge and recovery of condensates in a system of production and distribution of condensable vapor in a closed circuit at approximately constant pressure and temperature, in which the system includes at least one evaporating boiler and serving at least two systems of stations utilizing vapor at a high-pressure and a low-pressure, respectively, the said method including the steps of vapor feeding the said low-pressure system of stations by expanding part of the vapor feeding the said high-pressure system of stations, and recovering at least part of the condensates discharged from each system of stations by directing a substantially dry and at least mostly natural gravitational return-flow to an individual storage, collecting and accumulating same at least temporarily therein; reintroducing at least the condensates from the storage of the said high-pressure system of stations into the boiler with automatic control of the rate of outflow of the condensates proceeding from the said storage of the said low-pressure system of stations, said control being effected in particular by detecting the instant amount of condensates present in the said low pressure system of stations and interlocking floating on-off type control means in follow-up relationship with the detected instant amount of condensates present in the said storage of the said low-pressure system of stations; automatically controlling the rate of inflow of the condensates into the said storage of the said low-pressure system of stations by measuring the instant amount of condensates in the said storage of the said low-pressure system and interlocking floating on-off type control means in follow-up relationship with the measured instant amount of



condensates in the said storage of the said low-pressure system; controlling the rates of inflow and outflow, respectively, in mutually opposite relationship stopping said inflow when the said outflow is taking place and vice versa; isolating the said storage of the low-pressure system from the said low-pressure system by stopping the inflow of condensates proceeding from said low pressure systems, then, equalizing the respective pressures in the two storages of the two systems of stations by effecting communication between said storages and discharging the condensates from the said storage of the low-pressure system gravitationally into the said storage of the high-pressure system.

4,242,989

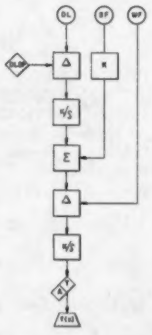
BOILER LEVEL CONTROL SYSTEM

Harvey H. Chamberlain, Marblehead, Mass., assignor to General Electric Company, Lynn, Mass.

Filed May 14, 1979, Ser. No. 38,658

Int. Cl.³ F22D 5/26

U.S. Cl. 122—451 R **10 Claims**



1. A boiler drum water level control system comprising:

a feedwater control valve upstream from the boiler drum water inlet;

a valve controller for controlling the position of the feedwater control valve; and,

a control circuit for generating a valve control signal based on the difference between drum level and drum level set point modified by the rate of change of the difference between steam flow and water flow.

4,242,990

SPARK IGNITED INTERNAL COMBUSTION ENGINE

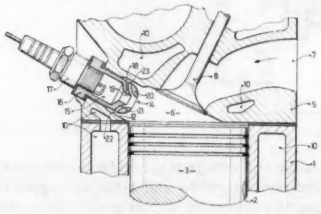
Dieter Scherenberg, and Walter Benedikt, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 27, 1978, Ser. No. 946,462

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1977, 2746596

Int. Cl.³ F02B *15/02, 23/00*

U.S. Cl. 123—263 **10 Claims**



1. A spark ignited internal combustion engine which has one main combustion chamber per cylinder and one ignition chamber which communicates with the main combustion chamber via an excess flow channel into which ignition chamber a spark plug having a central electrode is inserted, further wherein an orifice-like body having an exterior wall and means defining an opening to receive the spark plug, said body including said ignition chamber and said ignition chamber terminating in a flame ejector means which projects into said main combustion chamber through which the mixture located in said main combustion chamber which radially surrounds said body is induced upon the exit of the jet of flame through said flame ejector means out of said ignition chamber via induction openings in said exterior wall.

4,242,991

METHOD AND APPARATUS FOR ADJUSTING FUEL SUPPLY TO AN INTERNAL COMBUSTION ENGINE

Dieter Scherenberg, Stuttgart, and Valerio Bianchi, Hochdorf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 16, 1978, Ser. No. 916,414

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1977, 2727804

Int. Cl.³ F02B *3/00*

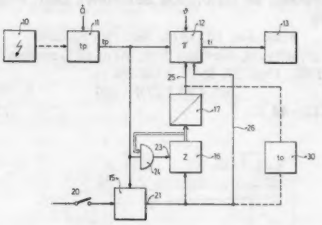
U.S. Cl. 123—326 **9 Claims**

1. An apparatus for supplying fuel to an internal combustion engine, comprising:

fuel injection valves disposed in the intake section of the internal combustion engine;

a pulse generator for generating pulses of variable length, the length depending at least on engine speed and air flow rate; and

a counter for counting engine speed-synchronous pulses, said counter having its output connected to an input of said pulse generator for increasing fuel supply for a limited



time and being further responsive to a signal initiated subsequent to engine braking.

4,242,992

INTERNAL COMBUSTION ENGINE WITH FUEL INJECTORS

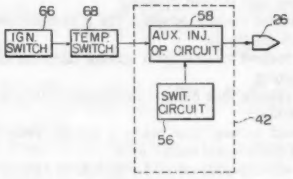
Yoshihisa Kawamura, Fujisawa, and Masaaki Saito, Yokosuka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 6, 1978, Ser. No. 949,060

Claims priority, application Japan, Oct. 7, 1977, 52-120016

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—491 **6 Claims**



1. An internal combustion engine having cylinders and an intake passageway through which air is supplied to the cylinders, comprising:

a main fuel injector;

means for operating said main fuel injector so as to inject fuel into the intake passageway in a variable amount according to the engine operating condition;

an auxiliary fuel injector;

means for operating said auxiliary fuel injector so as to inject fuel into the intake passageway in a constant amount when activated irrespective of the engine operating condition;

sensing means for sensing an engine operating parameter substantially representing the amount of intake air and for producing a signal in response to said parameter;

control means, responsive to said signal, said control means including said means for operating said main fuel injector and said means for operating said auxiliary fuel injector, said control means also including additional means for operating both said main and auxiliary fuel injectors until the magnitude of said parameter decreases to reach a first predetermined value below which value said auxiliary fuel injector is stopped and for operating only said main fuel injector until the magnitude of said parameter increases to reach a second predetermined value in excess of which value both said main fuel injector and said auxiliary fuel injector operate, the amount of intake air at the first predetermined value being smaller than that at the second predetermined value; and

means for starting a cold engine, which cold engine starting means includes an ignition switch having an "engine start-

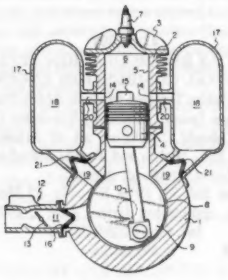
ing" position at which an engine starting motor of the engine is operated to rotate and an engine coolant temperature switch which is operatively connected between said ignition switch and said auxiliary fuel injector operating means, said temperature switch being put into its "ON" position when the engine coolant temperature is below a predetermined level, said auxiliary fuel injector operating means including means for operating said auxiliary fuel injector when said ignition switch is in its "engine starting" position and said engine coolant temperature switch is in the "ON" position.

4,242,993

2-CYCLE ENGINE OF AN ACTIVE THERMOATMOSPHERE COMBUSTION

Sigeru Onishi, Kanazawa, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jan. 29, 1979, Ser. No. 7,177
Claims priority, application Japan, Feb. 9, 1978, 53/01294
Int. Cl.³ F02B *33/04, 75/20*
U.S. Cl. 123—59 B **10 Claims**



1. A 2-cycle engine comprising:

an engine body having a cylinder bore and a crank room therein;

a piston reciprocally movable in said cylnder bore, said piston and said cylinder bore defining a combustion chamber;

an intake passage having mixture forming means therein for introducing a fresh combustible mixture into said crank room;

transfer passage means communicating said crank room with an inlet port opening into said combustion chamber;

an exhaust passage having an exhaust port opening into said combustion chamber for discharging exhaust gas into the atmosphere;

accumulation means arranged in said transfer passage and having a volume which is larger than the stroke volume of said piston, and;

check means arranged in said transfer passage between said crank room and said accumulation means for only allowing inflow of the fresh combustible mixture from said crank room to said accumulation means.

4,242,994

IDLE SPEED CONTROL SYSTEM FOR VEHICLE ENGINES

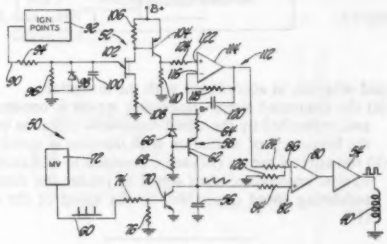
William A. Keely, Fremont, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 5, 1977, Ser. No. 857,636
Int. Cl.³ F02M *7/00;* **F02B** *33/00*
U.S. Cl. 123—339 **3 Claims**

1. An idle speed control system for use with an internal combustion engine of the type including a primary air passage having throttle means located therein for controlling the amount of air flowing through the primary air passage into the internal combustion engine, an auxiliary air supply means, including a bypass passage, for supplying auxiliary air to the engine bypassing the valve means, an air control valve connected to control the auxiliary air supply means for controlling the amount of auxiliary air supplied to the engine, the idle speed control system comprising:

speed means for generating a signal indicative of engine speed;

duty cycle means connected to said valve including pulse generator means for generating a constant frequency electrical signal for controlling the amount of auxiliary air supplied and for maintaining the speed of the engine during idle conditions at a set value, said electrical signals having a fixed pulse width to operate said valve at a predetermined duty cycle at said set value of idle speed, said duty cycle means further including:



recurrent signal generating means for generating a repetitive signal having said substantially constant repetition rate; and

pulse width generator means responsive to said repetitive signal and said speed signal for modulating said pulse width signal to operate said valve during the time the magnitude of said repetitive signal exceeds the magnitude of said speed signal, said pulse width generator means further including idle speed range means for prohibiting the communication of said pulse width signal to said valve during intervals when the engine speed exceeds that value of speed corresponding to the upper limit of engine idling speed and where said idle speed range means includes means for adjusting the peak value of said repetitive signal equal to the value of said speed signal when the engine speed is at the upper limit of engine idling speed.

4,242,995

PERFORMANCE OPTIMIZING CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Herbert Schramm, Stuttgart, and Bert Wurst, Möglingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 19, 1978, Ser. No. 925,990
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1977, 2739508
Int. Cl.³ F02P *5/04*
U.S. Cl. 123—425 **10 Claims**

1. Performance optimizing control system for an internal combustion engine **(10)** having

means **(13)** sensing an operating parameter (Md) of the engine and providing a parameter signal;

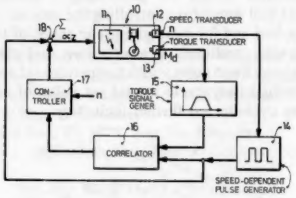
speed transducer means **(12)** providing a speed-dependent signal;

regulating means **(11, 18)** regulating the timing of a periodic event in the engine which controls performance thereof;

oscillating command signal generating means **(14)** generating a command signal which oscillates about a commanded datum;

correlator means **(16)** connected to said command signal and to said parameter signal and providing an error signal;

and control means (17) controlled by said error signal and providing a control signal to said regulating means to regulate the timing of said periodic event as a function of said error signal and to form, with said engine (10), the operating parameter sensing means (13) and the correlator (16), a closed control loop, the control means operating with a controlled regulating speed to affect the control regulation of said loop;



and wherein, in accordance with the invention,

(a) the command signal generating means is connected to and controlled by the speed-dependent signal to increase the frequency of oscillation with increase in speed and

(b) the control means (17) are connected to and controlled by said speed-dependent signal to render the controlled regulating speed dependent on the speed of the engine (10).

4,242,996

IGNITION TIMING CONTROL DEVICE FOR A TURBO-CHARGED INTERNAL COMBUSTION ENGINE

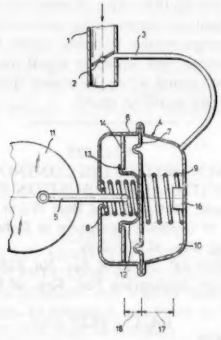
Rolf Urbansky, Adenbüttel, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,750

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816404

Int. Cl.³ F02P 5/04

U.S. Cl. 123—407 **1 Claim**



1. In a turbo-charged internal combustion engine having an ignition distributor, a throttle valve pivotally contained within the intake manifold of the engine, and an adjustment device acting on the distributor for advancing or retarding the ignition timing, the improvement comprising control means for adjusting the ignition timing as a function of the intake manifold pressure, said control means including a pressure housing, a yieldable wall in said housing forming a pressure chamber on one side thereof, a pressure line connected between said pressure chamber and said intake manifold and opening into said manifold at a point swept by the throttle, wherein changes in manifold pressure are transmitted through said line to said pressure chamber to act on said wall, at least a portion of said wall movable from a neutral position to a retarding position in response to increased pressure in said pressure chamber and to a timing advance position in response to negative pressures in said intake manifold and thereby said pressure chamber, coupling means between said wall and said adjustment device for retarding the ignition timing in response to displacement of said wall from said neutral position toward said retarding position and for advancing the ignition timing in response to displacement of said wall toward said advancing position, biasing means acting on said wall for permitting said wall to be moved toward said retarding position only when the pressure in the intake manifold, and thereby the pressure chamber, exceeds a predetermined minimum corresponding to the onset of engine knocking, wherein said biasing means comprises a first spring, and said housing includes stop means arranged so that said first spring engages the stop means when said wall is in the neutral position or the timing advance position, and said first spring engages said wall to act in opposition to the movement of said wall only when said wall is moved from said neutral position toward the retarding position, and further comprising a second spring acting on said wall in opposition to movement of said wall toward said timing advance position.

4,242,997

EXHAUST GAS RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINES

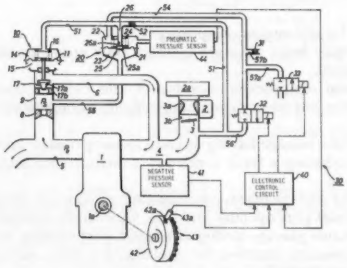
Tokio Kohama, Nishio; Takeshi Matsui; Akira Nishimatsu, both of Aichi; Tokuta Inoue, Mishima; Kiyohiko Oishi, Susono, and Kiyoshi Kobashi, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 31, 1979, Ser. No. 62,556

Claims priority, application Japan, Aug. 2, 1978, 53-94418

Int. Cl.³ F02M 25/06

U.S. Cl. 123—568 **5 Claims**



1. An exhaust gas recirculation system for an internal combustion engine having an induction passage for conducting air-fuel mixture into a combustion chamber of said engine, an exhaust passage for discharging exhaust gases from the combustion chamber, and a recirculation passage leading said exhaust passage to said induction passage to recirculate exhaust gases into the combustion chamber of said engine therethrough, said system comprising:

a pneumatically operated servomotor to be operated by negative pressure applied thereto from said induction passage;

flow control means disposed within said recirculation passage and associated with said servomotor for controlling the flow quantity of exhaust gases through said recirculation passage in accordance with changes of the negative pressure applied to said servomotor;

throttle means disposed within said recirculation passage upstream of said flow control means to form a space between said flow control means and said throttle means;

pressure responsive means for modulating negative pressure

applied to said servomotor in response to pneumatic pressure applied thereto and pressure appearing in said space;

first means for producing a first electric binary signal indicative of rotational speed of said engine;

second means for producing a second electric binary signal indicative of negative pressure in said induction passage;

third means for producing a first electric analog signal indicative of pneumatic pressure applied to said pressure responsive means;

a digital computer for repetitively calculating a value indicative of optimum pneumatic pressure to be applied to said pressure responsive means in accordance with the first and second binary signals, said computer being programmed to calculate the optimum value from a function describing a desired relationship among optimum pneumatic pressure, rotational speed of said engine and negative pressure in said induction passage;

fourth means for converting a third electric binary signal indicative of the calculated optimum value from said computer into a second electric analog signal;

fifth means for comparing a level of said first analog signal with first and second levels derived from said second analog signal to produce a first output signal therefrom when said first level is higher than the level of said first analog signal and to produce a second output signal therefrom when said second level is lower than the level of said first analog signal, said fifth means ceasing the output signals when the level of said first analog signal is between said first and second levels; and

first and second electrically operated valves to selectively apply negative pressure and the atmospheric pressure respectively from said induction passage and the exterior to said pressure responsive means when energized in response to one of said first and second output signals from said fifth means.

4,242,998

ENGINE EXHAUST GAS RECIRCULATION SYSTEM

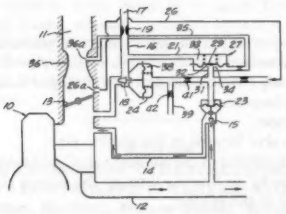
Toshio Shioya, Urawa; Hiroyuki Nishimura, Kounosu, and Takashi Umemoto, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1979, Ser. No. 70,025

Claims priority, application Japan, Sep. 6, 1978, 53-108541; Sep. 6, 1978, 53-108542

Int. Cl.³ F02B *47/08;* **F02M** *25/06*

U.S. Cl. 123—568 **4 Claims**



1. In an internal combustion engine having an intake passage for delivering an air-fuel mixture into the engine, a throttle valve in the intake passage, and an exhaust passage for carrying exhaust gases from the engine, the improvement comprising, in combination: a passageway connecting the exhaust passage to the intake passage downstream from the throttle valve for recirculating exhaust gases into said engine, a first control valve in said passageway, an air conduit connecting said intake passage downstream from said throttle valve to atmosphere, a second control valve in said air conduit, each of said control valves having a vacuum responsive actuator, said air conduit having a restriction located between its opening to atmosphere and said second control valve, an air control line connected to said air conduit downstream with respect to said restriction, a vacuum line connected to said intake passage upstream from said throttle valve, a regulating valve responsive to differential pressure between vacuum pressure in said vacuum line and vacuum pressure in said air control line, a control pipe system connecting said vacuum responsive actuators to said intake passage near said throttle valve, means whereby said regulating valve acts through said control pipe system to act upon vacuum responsive actuators for said control valves.

4,242,999

SELF-REGULATING HEATER

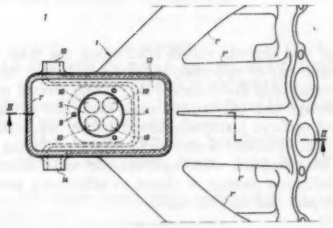
Alfred Hoser, Fasanenstrasse 4, Eitensheim, Fed. Rep. of Germany

Filed Mar. 7, 1977, Ser. No. 774,988

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1976, 2629610

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—548 **6 Claims**



1. A fuel entry system of an internal combustion engine comprising a carburetor having one barrel through which fuel and air are adapted to pass, an intake manifold connected to said carburetor and having a wall at right angle to said barrel, a stove disposed in said wall and offset with respect to said barrel, said stove comprising a self-regulating heater element having a steeply sloped positive temperature coefficient of resistivity, means to electrically connect the element to power supply so that shortly after energization thereof the element is maintained at an essentially constant preselected temperature whereby fuel droplets coming in contact with the stove will be vaporized to enhance start-up of the internal combustion engine, said stove having a top plate in heat transfer relationship with said element, said top plate being provided with a multiplicity of heat-conducting rods on the side opposite to said element and projecting into said intake manifold, a baffle within said intake manifold for guiding the fuel-air stream passing through the barrel towards said stove, said baffle being mounted for rotation within said intake manifold, and means for rotating said baffle in dependence on engine load such that with increasing load said baffle is swung away from said stove.

4,243,000

INDUCTION SYSTEM OF MULTI-CYLINDER ENGINE

Minoru Yamada, Iwata, Japan, assignor to Yamaha Hatsukoki Kabushiki Kaisha, Iwata, Japan

Filed Dec. 1, 1978, Ser. No. 965,485

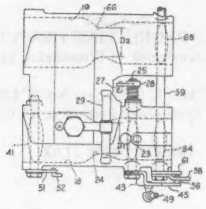
Claims priority, application Japan, Mar. 15, 1978, 53-30060

Int. Cl.³ F02M *13/06*

U.S. Cl. 123—442 **11 Claims**

1. In an internal combustion engine having at least two variable volume chambers in which combustion occurs, a first charge forming device, a second charge forming device, first and second main induction passages, each connecting a respective one of said charge forming devices with a respective one of said chambers only for delivering a charge from the charge forming device to the respective chamber, an auxiliary induction passage connecting said first charge forming device with each of said chambers for delivering a charge from said first

charge forming device to each of said chambers, said first charge forming device having supply means to supply a charge adapted to serve a specific engine operating condition for each of said chambers, said second charge forming device being devoid of such a specific supply means, and valve means for controlling the rate of communication of said charge forming devices with said chambers through the respective induction passages, said valve means including a pair of throttle valves,



each of said throttle valves controlling the flow through a respective one of said main induction passages, the improvement comprising the throttle valve in said second main induction passage and said second main induction passage having adjacent surfaces juxtaposed to each other when said throttle valve is in its closed position and means providing a seal between said surfaces when said throttle valve in said second main induction passage is closed to effectively preclude any leakage past said throttle valve.

4,243,001

INDUCTION SYSTEM FOR MULTI-CYLINDER ENGINE

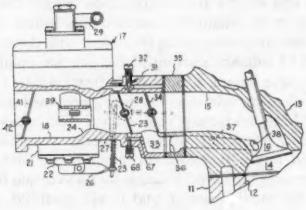
Minoru Yamada, Iwata, Japan, assignor to Yamaha Hatsukoki Kabushiki Kaisha, Iwata, Japan

Filed Feb. 9, 1979, Ser. No. 10,930

Claims priority, application Japan, Feb. 10, 1978, 53/14523

Int. Cl.[3] **F02N** *17/00*

U.S. Cl. 123—583 **10 Claims**



1. In an internal combustion engine having a first variable volume chamber in which combustion occurs, a second variable volume chamber in which combustion occurs, a first carburetor barrel, a first main intake passage interconnecting said first carburetor barrel with said first variable volume chamber and not with said second variable volume chamber, a second carburetor barrel, a second main intake passage interconnecting said second carburetor barrel with said second variable volume chamber and not with said first variable volume chamber, said first carburetor barrel being provided with a specific system for discharging a mixture particularly adapted for a certain condition of engine operation, said second carburetor barrel being devoid of such a specific system, and induction means for communicating said first carburetor barrel with said second variable volume chamber for supplying the particular mixture to said second variable volume chamber, said specific system being effective to increase the flow resistance through said first carburetor barrel from that which said first carburetor barrel would have if said first carburetor barrel was devoid of said specific system, the improvement comprising means providing a flow resistance in said second carburetor barrel equal to the flow resistance generated by said specific system in said first carburetor barrel for equalizing the flow through said first and said second main induction passages when the engine is operating at a condition other than the particular condition served by said specific system to provide uniform mixture to said first and said second chambers.

4,243,002

FUEL INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

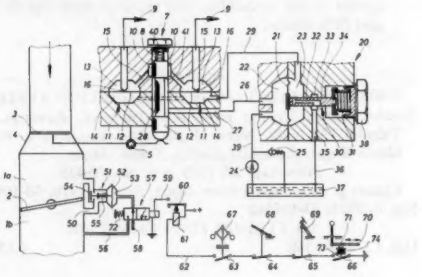
Erwin Freyer, Neckarsulm; Johannes Steinwart, Obersulm-Willsbach, and Peter Will, Bad Rappenau, all of Fed. Rep. of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm/Württ, Fed. Rep. of Germany

Filed Jun. 15, 1978, Ser. No. 915,676

Claims priority, application Fed. Rep. of Germany, Jul. 6, 1977, 2730386

Int. Cl.[3] **F02M** *39/00;* **F02D** *31/00;* **F16D** *23/00*

U.S. Cl. 123—325 **7 Claims**



1. A fuel injection system for an internal combustion engine with continuous fuel injection into a suction pipe for use with a vehicle having a clutch and gear box having at least one gear, said system comprising:

a suction pipe;

a throttle valve located in the suction pipe;

a member upstream of the throttle valve, said member being actuatable by air flowing through the suction pipe so as to dose fuel to the engine;

a duct which bypasses the throttle valve;

a duct valve located in said duct capable of closing off said duct;

a control means for controlling the operation of the duct valve, with said means including: a first switch and means for actuating said first switch when the clutch is engaged; a second switch and means for actuating said second switch when a gear of the gear box is engaged; a third switch and means for actuating said third switch when the throttle valve is closed; a fourth switch and means for actuating said fourth switch when the engine speed is above the idle speed; and means for actuating the duct valve to close off the duct when the throttle valve is closed, the engine speed is above the idling speed, the clutch is engaged and a gear of the gear box is engaged.

4,243,003

FUEL INJECTION SYSTEM

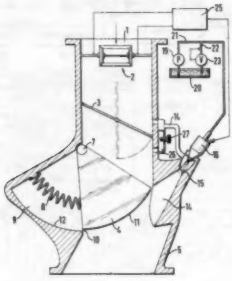
Heinrich Knapp, Leonberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 17, 1979, Ser. No. 39,915

Claims priority, application Fed. Rep. of Germany, May 27, 1978, 2823275

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—442 **7 Claims**



1. In a fuel injection system for mixture compressing, spark-ignited internal combustion engines, including: an air intake manifold defining an air flow passage; an arbitrarily operable throttle element mounted within the air intake manifold; a conditioning member mounted within the air intake manifold in series with the arbitrarily operable throttle element; and resetting force applying means engageable with the conditioning member, said conditioning member being mounted within the air intake manifold so that it can be pivoted by the air drawn into the intake manifold against the resetting force applied to the conditioning member by the resetting force applying means, the improvement comprising:

air bypass means connected to the air flow passage of the intake manifold, said air bypass means extending from a region of the air flow passage upstream of the arbitrarily operable throttle element to a region of the air flow passage controlled by the conditioning member;

means within said air bypass means for producing, in operative cooperation with the conditioning member, a constant air flow in the air bypass means; and

a fuel injection valve mounted to inject fuel into the air bypass means, wherein a pressure drop is produced at the conditioning member when the engine is in operation so that the constant air flow in the air bypass means is maintained for all positions of the arbitrarily operable throttle element.

4,243,004

INJECTION PUMP WITH ELECTRONICALLY CONTROLLED FULL-LOAD STOP

Ernst Ritter, Stuttgart; Werner Faupel, Gerlingen; Karsten Hummel, Wendlingen, and Johannes Locher, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

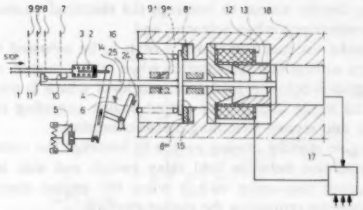
Filed Jan. 24, 1979, Ser. No. 6,308

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804038

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—367 **8 Claims**

1. An injection pump for Diesel fuel injected internal combustion engines wherein the quantity of fuel injected is regulated by displacement of a regulator rod means, the stroke of said regulator rod means having a detent means and being de-limited by means of a full-load stop means, said full-load stop means being settable in accordance with operational values of said engine by electronic control means, further wherein said full-load stop means is coupled with an armature of an electromagnet to provide for a predetermined stroke thereof and further means carried by said full-load stop means arranged to cooperate with prestressed resilient means capable of holding said full-load stop means in a terminal position to reduce full-load quantity of fuel injected.



4,243,005

IGNITION SYSTEM IN DUAL SPARK PLUG IGNITION ENGINE WITH EGR SYSTEM

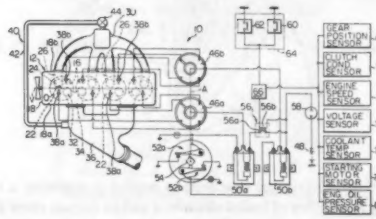
Takashi Hisatomi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 27, 1978, Ser. No. 900,574

Claims priority, application Japan, Apr. 29, 1977, 52-54794[U]

Int. Cl.³ F02P *15/02;* **F02B** *35/00;* **F02N** *17/08*

U.S. Cl. 123—638 **14 Claims**



1. A four stroke internal combustion engine having a combustion chamber defined between a cylinder head and a piston, said engine having an exhaust and an intake and an electric source, said engine further including means for recirculating a portion of exhaust gases from the engine back to the engine intake, said engine including:

first and second spark plugs disposed in the combustion chamber and operative to ignite an air-fuel mixture applied to said combustion chamber;

first transforming means for transforming electric current from said electric source into a high voltage current, electrically connectable to said first spark plug for placing said first spark plug in an operative condition;

second transforming means for transforming electric current from said electric source into a high voltage current, electrically connectable to said second spark plug for putting said second spark plug into an operative condition;

first switching means, responsive to at least one engine operating parameter, for interrupting an electrical connection between said first transforming means and said electric source when said at least one engine operating parameter is at a predetermined value indicative of a high power output engine operating range; and

second switching means, responsive to an engine operating parameter indicative of engine starting, for establishing an electrical connection between said first transforming means and said electric source, said second switching

means independent of the operation of said first switching means:

said first switching means comprises a relay switch electrically connected between said first transforming means and the electric source to interrupt the electrical connection therebetween when actuated, and

an intake vacuum responsive switch to be actuated to, in turn, actuate said relay switch when intake vacuum of the engine is below a predetermined level which is encountered at the high power output engine operating range, and said second switching means comprises:

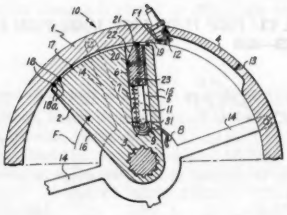
an engine starting sensing switch to interrupt the electrical connection between said relay switch and said intake vacuum responsive switch when the engine operating parameter represents the engine starting.

4,243,006

ROTARY ENGINE WITH LATERAL PISTONS

Pascual A. Quiroga, Cordoba 1080, 1 piso, 2000 Rosario, Sante Fe, Argentina

Filed Sep. 22, 1978, Ser. No. 944,973
Claims priority, application Argentina, Nov. 16, 1977, 270002
Int. Cl.³ F02B *53/00*
U.S. Cl. 123—247 **3 Claims**



1. A rotary internal combustion engine comprising a rotor having a plurality of radial chambers and an output rotor shaft:

a housing having an intake and exhaust opening in the outer periphery of said housing forming an outer shell rotatably supporting said rotor shaft;

said housing having an irregularly shaped cavity around the periphery of said rotor;

a plurality of radially disposed vanes, each mounted in one of the chambers of said rotor for radial reciprocating movement relative to the axis of rotation of said rotor;

an ignition means in said housing for igniting an explosive charge of fuel and air in said chamber;

means for supplying an explosive charge of fuel and air under pressure to said chamber;

a plurality of corresponding pistons each connected to one of said vanes for reciprocating movement in said radial chambers responsive to said explosive charge under a compression condition in the chamber of fuel and air through the intake of said chamber in the presence of said ignition means;

cam means interconnected between said outer shell and said vanes to initially actuate the vanes and pistons radially outwardly upon rotation of the rotor to positively maintain the positioning of the outer ends of said pistons in close proximity to the peripheral surface of said irregularly shaped cavity; and

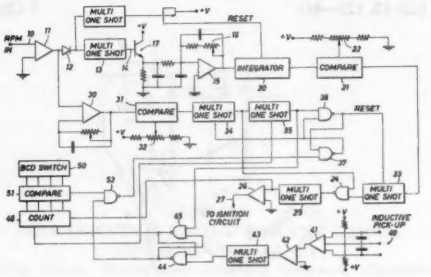
each of said vanes having a spring under tension biasing the vane against the cam means for actuating the vane outwardly, said tension spring responding immediately to the explosive force of the ignition charge which moves the piston inwardly.

4,243,007

SELECTIVE IGNITION TIMING

William M. Ehrhardt, and Earl J. Haury, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 26, 1979, Ser. No. 24,121
Int. Cl.³ F02P *5/04*; G01L *23/22*
U.S. Cl. 123—419 **13 Claims**



1. An ignition optimizing circuit for multiple cylinder internal combustion engines, said engines being equipped with an electronic ignition system including a switching amplifier that controls the switching of low voltage current in the ignition coil, said optimizing circuit comprising:

control means responsive to engine speed for supplying a control signal whose frequency equals the engine speed times the number of cylinders divided by two;

counting means for counting the cycles of said control signal and converting the count to a digital number;

reset means coupled to said counting means to reset said counting means once for each two revolutions of the engine;

memory and microprocessor means, said counting means being coupled to said memory and microprocessor means to cause said memory means to produce an output signal related to the desired ignition timing of each cylinder; and,

multiplexing means coupled to said memory means and responsive to said output signal to produce a pulse for actuating the switching amplifier of the electronic ignition system.

12. An ignition circuit for use in determining the octane requirement of a selected cylinder of a multiple cylinder engine comprising:

a circuit means coupled to the engine for producing a plurality of ramp voltages whose slopes are related to the engine speed, said circuit producing a separate ramp voltage for firing each cylinder;

comparing means coupled to said circuit means for comparing the instantaneous value of said ramp voltage with a preset voltage to produce an ignition signal when said ramp and preset voltages are equal;

ignition means coupled to said comparing means and responsive to said ignition signal for firing all cylinders except said selected one;

counting means for counting the number of ignition signals produced and supplying an interrupting signal when the position of said selected cylinder in the firing order of said engine is reached, said counting means being reset once in each cycle of said firing order, said interrupting signal being used to inactivate the coupling between said comparing means and said ignition means; and,

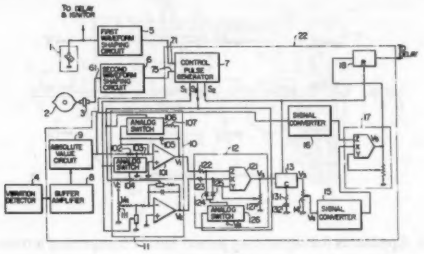
delay circuit means for producing a delay signal, said delay circuit being coupled to said ignition means when the coupling between said comparing means and said ignition means is inactivated.

4,243,008

METHOD FOR CONTROLLING IGNITION TIMING OF INTERNAL COMBUSTION ENGINE

Norio Omori; Hideya Fujisawa, both of Kariya; Yutaka Kawashima, Okazaki; Masakazu Ninomiya, Kariya; Hisasi Kawai, Toyohashi, and Takeshi Matsui, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Jan. 5, 1979, Ser. No. 1,208
Claims priority, application Japan, Feb. 1, 1978, 53/10319
Int. Cl.³ F02P 5/04
U.S. Cl. 123—425 **4 Claims**



1. A method for controlling ignition spark timing for an internal combustion engine having an output shaft rotated by a piston, the method comprising the steps of:

monitoring the magnitude of vibration of said engine by vibration responsive means coupled to said engine;

integrating said magnitude of vibration during a predetermined interval of rotation of said output shaft before arrival of a piston of said engine at the top dead center position;

integrating a predetermined magnitude during said predetermined interval of rotation of said output shaft;

dividing the output of said former integrating step by the output of said latter integrating step;

holding said division output of said former dividing step after an arrival of said piston to the top dead center position;

dividing said monitored magnitude of vibration by a holding output of said former holding step; and

holding said division output of said latter dividing step at the same time as said former holding step; and

controlling ignition spark timing supplied to said engine in response to a holding output of said latter holding step.

4,243,009

DETONATION CONTROL APPARATUS FOR OUTBOARD MOTOR

Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Sep. 27, 1979, Ser. No. 79,425
Int. Cl.³ F02B 33/00; F02M 17/00
U.S. Cl. 123—435 **5 Claims**

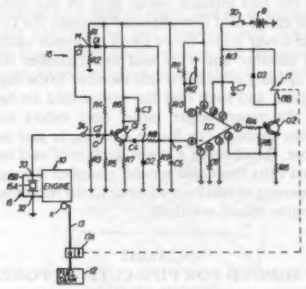
1. Detonation control apparatus for an internal combustion engine which is supplied with a mixture of fuel and air comprising:

(A) an electrically operated valve operable to regulate the proportion of fuel to air in the mixture supplied to said engine;

(B) a transducer for sensing engine detonation and for providing an electrical signal having a value related to detonation magnitude;

(C) electrical control means responsive to said signal for operating said valve to maintain the proportion of fuel to air in said mixture below a predetermined proportion when detonation is below a predetermined magnitude and to increase the proportion of fuel to air above said predetermined proportion when detonation exceeds said predetermined magnitude; and

(D) power supply means for energizing said electrically operated valve and said electrical control means;



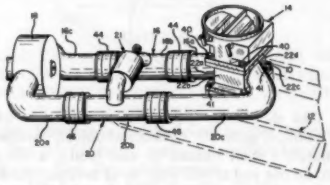
said control means being further responsive to decrease of signal magnitude of said signal below a predetermined value to increase the proportion of fuel to air above said predetermined proportion even if detonation is below said predetermined magnitude.

4,243,010

SUPERCHARGER APPARATUS WITH FIXED BAFFLE AIR-FUEL MIXTURE ROUTING BOX

Robert A. Zopfi, 4301 S.E. Fieldcrest, Milwaukie, Oreg. 97222

Filed Jan. 25, 1979, Ser. No. 6,367
Int. Cl.³ F02B 33/44
U.S. Cl. 123—559 **6 Claims**



1. An apparatus for directing an air-fuel mixture from a fuel mixture outlet port of a fuel induction device of an internal combustion engine to an inlet port of a supercharger, in which the mixture is pressurized, and the pressurized mixture from an outlet port of the supercharger to an intake inlet port of the intake manifold of the engine comprising:

an upright hollow air-fuel mixture routing box having an upper cover member, a lower base member, and first and second side members extending between said cover and base members;

said routing box also including an opening free internal fixed baffle member separating the interior of said routing box into first and second chambers, said baffle member extending between said cover and base members in a non-vertical plane;

said routing box defining a first opening through said cover member which communicates between the exterior of said routing box and said first chamber, a second opening through said base member which communicates between the exterior of said routing box and said second chamber, a third opening through said first side member which communicates between the exterior of said routing box and said first chamber and a fourth opening through said second side member which communicates between the exterior of said routing box and said second chamber;

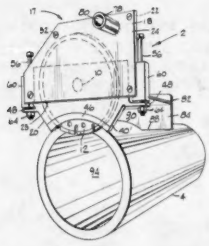
said apparatus also including means for connecting the fuel

mixture outlet port to said first opening, means for connecting the second opening to the intake inlet port, means for connecting the third opening to the supercharger inlet port and means for connecting the supercharger outlet port to the fourth opening such that an air-fuel mixture from the fuel mixture outlet port of the fuel induction device enters said first chamber through the first opening in said cover plate, flows along an upper surface of said baffle member and exits said first chamber through the third opening in said first side member to the supercharger inlet port, and such that the pressurized air-fuel mixture from the supercharger outlet port enters said second chamber through the fourth opening in said second side member, flows along a lower surface of said baffle member and exits from said second chamber through the second opening in said base member to the intake inlet port of the engine intake manifold.

4,243,011
DUST SHROUD FOR PIPE-CUTTING PORTABLE CIRCULAR SAW

Frederick M. Bodycomb, Jr., Englewood, and Glenn R. Bauman, Littleton, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Jun. 25, 1979, Ser. No. 51,604
Int. Cl.³ B28D *1/04*
U.S. Cl. 125—13 R **5 Claims**



1. A dust shroud for a portable circular saw adapted for cutting a hollow generally cylindrical object, the saw comprising a motor, a shaft rotated by said motor, a circular blade mounted on one end of said shaft so as to rotate therewith, and a motor housing surrounding said motor with the shaft projecting out of the motor housing and the blade being mounted on the shaft outside the motor housing; said dust shroud comprising

(a) an upper blade housing attached to said saw and comprising walls forming a first enclosed chamber open at the bottom, said first chamber being of sufficient size to surround at least the major portion of said blade and to permit free rotation of said blade within said upper blade housing, said upper blade housing also having an exhaust duct attached thereto with the interior of said exhaust duct communicating with said first chamber;

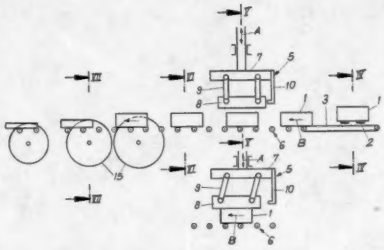
(b) a lower blade housing comprising walls forming a second enclosed chamber open at the top and bottom, said second chamber being of sufficient size to surround at least the lower portion of said blade and to permit free rotation of said blade within said lower blade housing, said lower blade housing fitting within said upper blade housing and capable of slidable movement therein, and the periphery of the open bottom of said lower blade housing having a shape generally conforming to the surface curvature of said object; and

(c) guide means mounted on said upper blade housing and attached to said lower blade housing, said guide means being adapted to bias said lower blade housing slidably outward from within said upper blade housing and to guide said lower blade housing slidably into said upper blade housing when said lower blade housing is urged against said object.

4,243,012
APPARATUS FOR SEPARATING JOINED-BRICKS

Dieter Keck, Ibbenbüren, Fed. Rep. of Germany, assignor to C. Keller GmbH u. Co. KG, Ibbenbüren-Laggenbeck, Fed. Rep. of Germany

Filed May 4, 1979, Ser. No. 36,266
Claims priority, application Fed. Rep. of Germany, May 8, 1978, 2819991
Int. Cl.³ B28D *1/32*
U.S. Cl. 125—23 R **13 Claims**

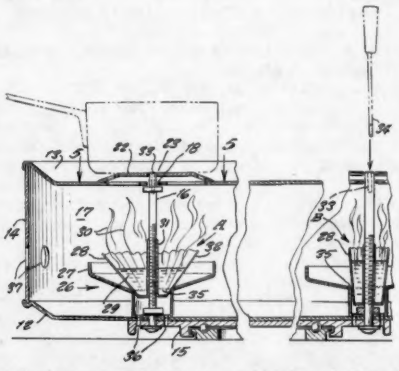


1. Apparatus for separating joined-bricks comprising a transport means for moving said joined-bricks, a separating means disposed along said transport means for separating said joined-bricks into two parts, said separating means comprising a vertically movable carrier means carrying a pressure bar, said vertically movable carrier means being disposed to cause said pressure bar to engage one part of said joined-brick to effect vertical movement thereof relative to another part of said joined-brick such that the joined-bricks are thereby separated, said carrier means comprising a vertically movable actuating means and pivotal means pivotally connecting said pressure bar to said actuating means such that when said pressure bar engages said one part of said joined-brick to effect said separation, said pressure bar moves synchronously with said engaged one part along said transport means as said pivotal means pivot, whereby the joined-bricks are movable without interruption along said transport means during said separation.

4,243,013
FOOD WARMER

Harry Goon, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jun. 13, 1979, Ser. No. 48,142
Int. Cl.³ F24C *5/00*
U.S. Cl. 126—43 **4 Claims**



1. A food warmer, comprising in combination, a hollow shell mounted upon a rotable turn table, a plurality of burners inside said shell and a hot plate on said shell above each said burner,

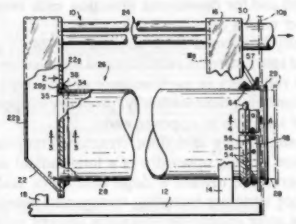
each burner including a brazier with a receptacle therein receiving sterno canned heat fuel, and said receptacle being expanded in diameter when raised upward out said brazier.

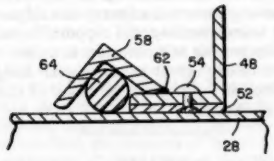
4,243,014

COMBUSTION CHAMBER CONSTRUCTION

Lloyd P. Hunt, Bridgeton, Mo., assignor to Johnson Heater Corp., Bridgeton, Mo.

Filed Aug. 30, 1979, Ser. No. 71,317
Int. Cl.³ F24H *9/14*; B21D *53/00*; F16L *41/00*
U.S. Cl. 126—119 **3 Claims**





1. An improved combustion chamber construction comprising a cylindrical shell made of a corrosive-resistant metal, a circular array of integral longitudinal teeth formed at one end of the shell, a metal ring having a circular cross-section shrunk-fit onto the shell at or near the roots of the teeth, a header sheet made of a metal different from the shell metal and having a thermal coefficient of expansion similar to that of the ring, means defining an opening in the header sheet for receiving said one shell end whereby said ring abuts one face of the header sheet while the roots of the teeth are disposed at or near the opposite face of said sheet, a continuous weld bead extending between the ring and the one header sheet face all around the ring, said weld bead being composed of a metal having a coefficient of thermal expansion similar to that of the ring and the header sheet, said teeth being bent radially outward at the opposite sheet face and being in intimate relatively large area thermal heat exchange contact with that face, and a series of welds connecting the teeth to said opposite sheet face radially outboard of the ring.

4,243,015

ASH-FREE FIREPLACE VENTILATING APPARATUS

Glaydon C. Trytten, R.R. 2, Lake Mills, Iowa 50450

Filed Dec. 18, 1978, Ser. No. 970,614
Int. Cl.³ F24B *1/18, 7/00*
U.S. Cl. 126—120 **20 Claims**

1. In combination with a fireplace having a rear wall, opposiiting first and second end walls, a hearth surface and a wood grate,

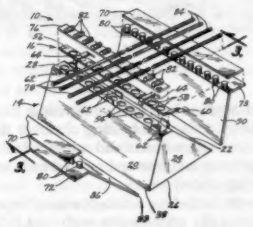
an ash-free ventilating apparatus comprising,

a grate means adapted to support said wood grate above said hearth surface,

a ventilator housing supported on said hearth surface and located below said grate means, said housing being centrally located within said fireplace and having an interior chamber, inlet port means in communication with said chamber and adapted for connection to a source of fresh air, and outlet port means in communication with said chamber and centrally disposed below said grate means,

valve means operationally connected to said outlet port means to regulate the flow of fresh air through said outlet port means,

said ventilator housing comprising first and second elongated side walls and forward and rearward ends, each said side wall being in spaced apart relation to the immediately adjacent end wall of said fireplace and sloping downwardly toward said hearth surface and outwardly toward said immediately adjacent end wall so that said ventilator



housing has a generally inverted V-shaped cross sectional area with the apex portion of said V-shape being centrally disposed between said end walls,

said outlet port means comprising a plurality of outlet apertures positioned along said apex portion and extending therethrough, and

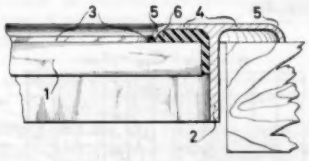
said valve means comprising a plate element slidably mounted to said apex portion, said plate element having a plurality of valve apertures therethrough to alternatively, selectively align and misalign with said outlet apertures.

4,243,016

VITREOUS CERAMIC COOKER HOB PLATE WITH PERMANENTLY ELASTICALLY ADHESIVELY ATTACHED CIRCUMFERENTIALLY SURROUNDING FRAME

Klaus Kristen, Wiesbaden, and Herwig Scheidler, Finthen, both of Fed. Rep. of Germany, assignors to JENAer Glaswerk Schott & Gen., Fed. Rep. of Germany

Filed Apr. 4, 1979, Ser. No. 26,588
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 7812144[U]
Int. Cl.³ F24C *15/10*; H05B *3/68*
U.S. Cl. 126—211 **8 Claims**



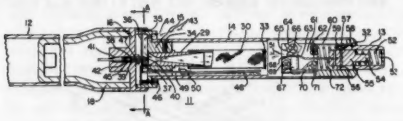
1. A vitreous ceramic cooker hob plate having a circumferentially surrounding frame permanently elastically adhesively fitted thereto, said frame being generally of T-shaped cross-section having an inwardly extending flange portion overlapping, but slightly spaced from the upper marginal surface portion of said ceramic plate, another portion of said frame extending downwardly past the outer edge of said ceramic plate but slightly spaced therefrom, and a permanently elastic adhesive filling the spaces between said frame and said ceramic plate, said permanently elastic adhesive making a sealed and firm joint between said frame and said hob plate.

4,243,017

CATALYTICALLY HEATED CURLING DEVICE WITH IMPROVED IGNITION SYSTEM

Walter J. Diederich, West Newbury, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 11, 1979, Ser. No. 47,260
Int. Cl.³ A45D *1/04*
U.S. Cl. 126—409 **12 Claims**



11. A hand-held curling iron comprising:

a tubular body defining a heating chamber therein and having first and second ends and a hair winding portion disposed between said first and second ends and surrounding said heating chamber;

heating means including a non-combustible sleeve disposed in and generally coextensive with said tubular body and treated with a catalytic material, said sleeve end nearer said first end of said tubular body being unravelled to substantially fill said sleeve end and act as a flame arrestor and increase ignition efficiency;

a housing mounted proximate said second end of said tubular body and forming a handle including fuel supply means for storing a fuel;

vaporizing means positioned between said fuel supply means and said heating means for vaporizing the fuel;

a nozzle means generally coextensive with said tubular body and positioned between said vaporizing means and said heating means for accelerating said vaporized fuel;

tube means generally coextensive with said tubular body and positioned between said nozzle means and said heating means for mixing said vaporized fuel with air and for supplying a vaporized fuel/air mixture to said catalytic material; and

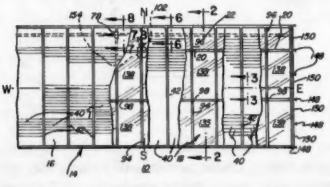
self-contained ignition means proximate said filled sleeve end and positioned in a tip housing telescopically mounted proximate said first end of said tubular body for initiating oxidation of the vaporized fuel/air mixture in the presence of said catalytic material.

4,243,018

SOLAR ENERGY CONCENTRATOR

S. Eugene Hubbard, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Jun. 19, 1978, Ser. No. 916,816
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—425 **20 Claims**



1. A solar energy concentrator comprising:

an elongated collector for receiving concentrated solar energy and positioned to extend longitudinally in an East-West direction spaced above a supporting surface;

a horizontal array of separate, elongated, thin, flat, solar energy reflectors for reflecting received solar energy and focusing the same upwardly toward said collector,

said reflectors mounted in parallel, elongated rows extended parallel of said collector and at a level spaced below the same with said reflectors in end to end relation in each row and forming columns of reflectors normal to said rows;

support means for supporting opposite ends of each reflector, said support means including a substantially flat base member having an upstanding flange portion on opposite sides and means pivotally mounting each base portion, said support means being unobstructed in a generally upward direction thereby permitting removal and/or replacement of each reflector by movement in a generally upward and/or downward direction with respect to said support means associated therewith;

a generally horizontal floor structure having a plurality of spaced apart, parallel rails disposed adjacent opposite ends of the reflectors in each column of the array, each said reflector being independently, pivotally supported from a pair of said rails at opposite ends;

an enclosure above said floor structure comprising a roof structure sloping upwardly of a longitudinal edge of said floor structure toward a ridge parallel of said collector, said roof structure including transparent panels for transmitting solar energy downwardly toward said reflectors on said floor structure, and a back wall sloping upwardly of an opposite longitudinal edge of said floor structure joining said roof structure adjacent said ridge; and

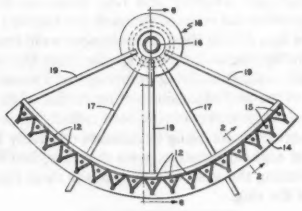
drive means interconnecting said supports in each column for pivotally moving said reflectors in unison to substantially continuously reflect received solar energy toward said collector as the angle of elevation of said received solar energy changes.

4,243,019

LIGHT-WEIGHT-TROUGH TYPE SOLAR CONCENTRATOR SHELL

Asbjorn M. Severson, Hennepin County, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 25, 1978, Ser. No. 954,711
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—438 **4 Claims**



1. A generally parabolic cylindrical trough solar concentrating collector comprising:

a pair of oppositely disposed end support members:

structural means spanning said support members said structural means comprising a plurality of juxtaposed, generally triangular elongate structural members each of which is provided with a concave side such that the concave sides together generate a generally parabolic trough-shaped surface;

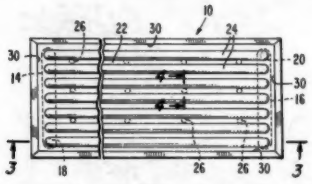
a radiant energy reflective surface on said concave generally parabolic trough such that radiant energy striking the concave surface is focussed on a line above said concave surface;

elongated radiant energy receiving and absorbing conduit for containing a heat transfer fluid disposed along the focal line of said radiant energy;

support means supporting trough from said end support

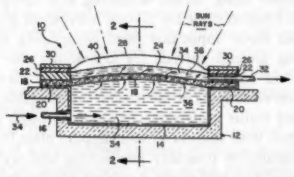
members said support means including bearing means allowing free angular rotation of said trough means.

4,243,020
SOLAR PANEL AND PANEL ASSEMBLY
Thomas P. Mier, 194 Shady Ln., Trenton, N.J. 08619
Filed Oct. 23, 1978, Ser. No. 953,661
Int. Cl.³ F24J 3/02
U.S. Cl. 126—444 **2 Claims**



1. A solar heat collector panel comprising: a first sheet having an inlet and an outlet manifold; and a second sheet in superposed relation to the first sheet and connected at its periphery to the first sheet, the second sheet having a plurality of channels communicating with and extending between the inlet and outlet manifolds, the inlet and outlet manifolds being formed in closely spaced relation to the respective, opposite ends of the first sheet as corrugations formed out of the material of the first sheet, the material of the first sheet being otherwise generally flat between the opposite ends thereof, said corrugations being disposed wholly to one side of the general plane of the first sheet, the channels of the second sheet being defined by a plurality of closely spaced, parallel corrugations extending substantially from end to end of the second sheet between the inlet and outlet manifolds of the first sheet, said corrugations of the second sheet being pressed out of the general plane of the second sheet in a direction opposite to that in which the corrugations of the first sheet are extended, the opposite ends of the corrugations of the second sheet being disposed in communication with the corrugations defining said inlet and outlet manifolds of the first sheet, the material of the first and second sheets being spot welded at locations spaced along the lengths of said sheets and occurring between adjacent corrugations of the second sheet, the sheets being spaced apart at locations between the spot welds providing cross-flow areas between adjacent corregations of the second sheet.

4,243,021
SOLAR HEAT CONVERSION PANEL AND METHOD OF ASSEMBLY
Charles A. Homsy, and Paul T. Homsy, both of Houston, Tex., assignors to Vitek, Inc., Houston, Tex.
Filed Jan. 9, 1978, Ser. No. 868,016
Int. Cl.³ F24J 3/02
U.S. Cl. 126—449 **21 Claims**



1. A solar energy collector panel having a fluid inlet port and a fluid outlet port, comprising:

a porous body consisting of a thermally-insulating porous matrix material having a unitary mass enclosing surface and bulk macropores, the walls of said macropores defining tortuous fluid passageways in said body, and distinct elements discretely disposed on said walls of said macropores throughout said matrix material, said elements having a high degree of absorptivity for solar radiation and low emissivity for long-wave radiation;

a first overlaying flexible member essentially transparent to incident solar radiation and substantially opaque to radiation emitted by said porous body, said first member and said porous body forming a collection chamber therebetween;

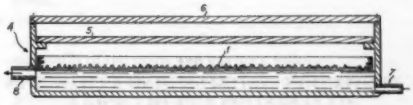
a second flexible member overlaying said first member and spaced therefrom, said second member being essentially transparent to incident solar radiation and substantially opaque to radiation emitted by said porous body;

a low-thermal conductivity fluid filling the space between said first and second members;

means admitting a working fluid to be heated under said porous body through said inlet port, said working fluid being sufficiently pressurized to cause said working fluid to percolate through said passageways of said porous body into said collection chamber, thereby converting radiant energy to sensible heat in said working fluid; and

said working fluid exiting from said collection chamber through said outlet port.

4,243,022
SOLAR PICK-UP PANEL
Angelo Pedone, 13 Place Verte, Tournai, Belgium
Filed May 3, 1978, Ser. No. 902,342
Claims priority, application Italy, May 9, 1977, 23357 A/77
Int. Cl.³ F24J 3/02
U.S. Cl. 126—449 **9 Claims**

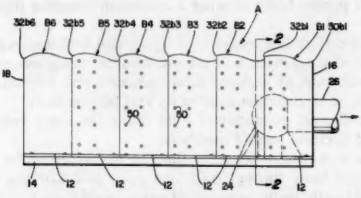


1. A solar pick-up comprising a body of fluid and a thin sheet, or foil, for conductively transferring solar energy directly to said fluid, said thin metal sheet, or foil, having an arborescent dendritic surface configuration having primary and secondary reliefs on one side, said arborescent dendritic surface being provided with a heat-absorptive coating to be exposed to solar energy, the opposite side of the sheet, or foil, being in direct contact over virtually the whole of its surface with said fluid, said sheet, or foil, being self-supporting, impermeable to said fluid and being substantially entirely formed by electro-deposition of thermally-conductive metal whereby heat absorption is substantially unaffected by the angle of incident light.

4,243,023
SOLAR COLLECTOR
Frank E. Rom, Avon Lake; Carl J. Wenzler, North Ridgeville, and William L. Maag, Strongsville, all of Ohio, assignors to Rom-Aire Solar Corporation, Avon Lake, Ohio
Filed May 19, 1978, Ser. No. 907,787
Int. Cl.³ F24J 3/02
U.S. Cl. 126—449 **19 Claims**

1. A solar collector comprising: a plurality of absorber plates of opaque material having a high thermal conductivity and having outer surfaces highly absorptive of solar energy, each said plate having opposite overlying and underlying portions, said plates being overlapped along one direction such that each plate, except for the end plates, has said overlying portion thereof overlying an underlying portion of one adjacent plate and has said underlying portion thereof underlying an overly-

ing portion of another adjacent plate to define a plurality of overlapping areas spaced along said one direction, said plates being slightly spaced from one another in said overlapping areas transversely of said one direction to define spaces through which air flows from said outer surfaces toward the opposite surfaces of said plates, each said plate having a predetermined dimension generally along said one direction and the dimension of said underlying portion generally along said one



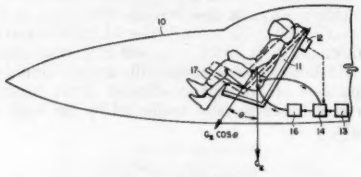
direction being approximately 25–50% of said predetermined dimension, each said plate having a bottom surface facing away from the sun and said outer surface thereof being exposed to the sun, each said plate being of a material having a predetermined thermal conductivity and a predetermined thickness, and said outer surface being related to said thermal conductivity and thickness such that the temperature difference between said outer and bottom surfaces is minimized.

4,243,024

G-PROTECTION SYSTEM SENSING A CHANGE IN ACCELERATION AND TILT ANGLE

Richard J. Crosbie, Langhorne, and Paul R. Edwards, Chalfont, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 2, 1979, Ser. No. 25,822
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—1 A **9 Claims**



1. A G-protection system for the occupant of an aircraft, comprising in combination:

a seat for supporting the occupant in the aircraft;

sensor means, said means connected to said seat for producing a first signal indicative of the product of acceleration along the vertical axis of an aircraft and the cosine of the angle subtended by said axis with the thoracic axis of the occupant;

a source of fluid pressure;

control means connected to receive said first signal and said source for producing a regulated fluid pressure; and

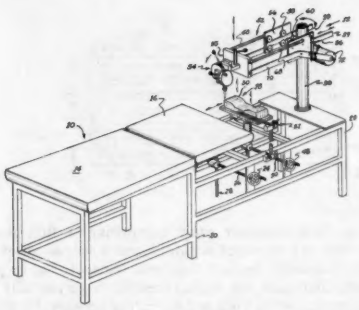
a G-suit connected to receive said regulated fluid pressure for constraining the occupant against body distension caused by the acceleration.

4,243,025

CERVICAL ADJUSTING UNIT

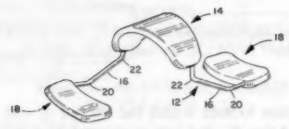
Donald E. Jones, Mullins, S.C., assignor to Life Chiropractic College, Inc., Marietta, Ga.

Filed Apr. 26, 1978, Ser. No. 900,195
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—70 **7 Claims**



5. An improved chiropractic cervical adjusting unit for applying a specifically directed force to the cervical spine of a patient, said unit including an elongate adjustable table for supportably receiving and positioning a patient in a preselected side posture orientation thereon, a headpiece located adjacent an end of said table for supportably receiving the head of a patient, and means operatively connected to said headpiece for adjustably positioning the headpiece relative to said table rotationally about an axis parallel to the longitudinal axis of said table and linearly in directions parallel and perpendicular to said longitudinal axis of said table, positionally adjustable force applicator means located adjacent said headpiece for applying a specifically directed force at a particular location on the cervical spine of a patient lying on said table, said force applicator means comprising a generally vertical support column, an adjustable parallelogram support section movably mounted at one end portion thereof on said support column for rotational movement about a vertical axis, means for moving said one end portion of said parallelogram support section horizontally toward and away from said support column, said parallelogram support section extending outwardly from said column and having an outer end positionable in general proximity to said table headpiece, said parallelogram support section including a generally vertical support plate at said outer end thereof, and means for pivotally moving said support plate upwardly and downwardly with respect to said support column about a horizontal axis adjacent said support column while maintaining said support plate in a vertical attitude, a force applicator head, means mounting said force applicator head on said support plate for pivotal movement about a vertical axis, said force applicator head comprising an elongate stylus having an end surface for contacting the body of a patient on said table to impart a particularly directed force against the cervical spine of the patient on said table, means for directing said stylus in its axial direction through a predetermined distance with respect to said support plate to apply said force, and means for rotatably positioning said stylus about a first horizontal axis and about a second axis perpendicular to said horizontal axis and about an axis perpendicular to the longitudinal axis of said stylus, whereby said stylus can be adjustably located to impart said force against the patient on the table in any direction.

4,243,026
FINGER SPLINT
Lois M. Barber, 111 Nieto Ave., Long Beach, Calif. 90803
Filed Oct. 5, 1978, Ser. No. 948,869
Int. Cl.[3] A61F *5/10*
U.S. Cl. 128—77 **7 Claims**



1. An adjustable finger splint which permits limited movement comprising:

an elongated central section having a first and a second end, said central section being concave lengthwise such that when said central section is mounted on one of the dorsal and ventral surfaces of a finger across the width of the finger and at the proximal interphalangeal joint, said central section will fit along the transverse circumferential curve of the finger;

a first elongated arm having a proximal and a distal end, said proximal end of said first arm being connected to said first end of said central section;

a second elongated arm having a proximal end and a distal end, said distal end of said second arm being connected to said second end of said central section;

said first and second arms being sized and positioned such that when said central section is mounted on one of the dorsal and ventral surfaces of a finger across the width of the finger and at the proximal interphalangeal joint, said first arm extends along one side of the finger to a point adjacent the tip of the finger and said second arm extends along the other side of the finger in a direction opposite to the direction of extension of said first arm to a point adjacent the base of said finger;

a first elongated support connected at one end to said distal end of said first arm, said first support extending in a direction substantially perpendicular to said first arm such that when said central section is mounted on one of the dorsal and ventral surfaces of a finger across the width of the finger and at the proximal interphalangeal joint, said first support is in a position to hold and support a portion of the finger adjacent the tip of the finger on the side of the finger which is opposite to that being held by said central section;

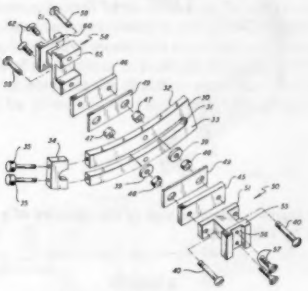
a second elongated support connected at one end to said proximal end of said second arm, said second support extending in a direction substantially perpendicular to said second arm such that when said central section is mounted on one of the dorsal and ventral surfaces of a finger across the width of the finger and at the proximal interphalangeal joint, said second support is in a position to hold and support a portion of the finger adjacent the base of the finger on the side of the finger which is opposite to that being held by said central section;

said central section and said first and second arm being formed of a continuous resilient spring material;

said splint being otherwise open along its length to permit said splint to be readily mounted and removed;

said arms being bent and bendable along their length in a direction opposite to the direction of the curve of the central section to permit adjustment of the forces applied to a finger.

4,243,027
HIP STABILIZER
Y. Ronald LaCourse, 25 Cheyenne Crescent, Whitesboro, N.Y. 13492
Filed Oct. 20, 1978, Ser. No. 953,076
Int. Cl.[3] A61F *5/01*
U.S. Cl. 128—80 F **12 Claims**



1. Apparatus for stabilizing the hips of a crippled individual including a pair of leg braces, one brace for the left leg of a person and another for the right leg of a person, wherein the improvement comprises

a guide member having two opposed vertical side walls and a contoured slotted hole passing through said vertical side walls, the slotted hole being contoured to describe a predetermined path of travel within a generally vertical plane,

a slide mechanism having two opposed plates that are arranged to ride in close sliding contact with the vertical side walls of the guide and having a follower that is seated within the contoured slotted hole of the guide which provides a close running fit therewith to allow the slide mechanism to move back and forth along the path of travel as described by said slotted hole,

a first mounting bracket secured at one end of said guide member and at the other end to one of said pair of leg braces, and

a second mounting bracket secured at one end to said slide mechanism and at the other end to the other one of said pair of leg braces whereby the motion of the braces is limited to that described by the contoured slotted hole.

4,243,028
THERAPEUTIC PRESSURE STRAP
Alfonso Puyana, 444 W. 24th St., Yuma, Ariz. 85364
Continuation of Ser. No. 912,882, Jun. 5, 1978, abandoned, which is a continuation of Ser. No. 745,646, Nov. 29, 1976, abandoned. This application Jun. 7, 1979, Ser. No. 46,349
Int. Cl.[3] A61F *13/00*
U.S. Cl. 128—165 **6 Claims**

1. A therapeutic pressure strap adapted for applying concentrated localized pressure to the muscles of a limb for alleviating pathological lesions, said pressure strap comprising:

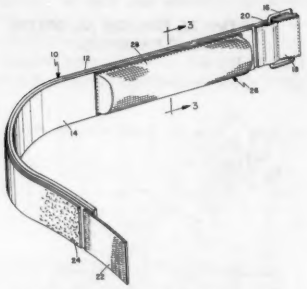
an elongated flexible inelastic band having an inside and an outside for encircling a human limb with the inside toward the limb,

adjustable cooperative fastening means proximate the ends of said band for adjustably fastening said band about the limb and adjusting the pressure applied thereto,

an enclosed pocket formed on the inside of said band, and

pressure concentrating means protruding from the inside of said band and including at least one elongated resilient self supporting cylindrical pressure member mounted on the inside of said pocket, and having a semi-cylindrical pres-

sure surface extending partially along the longitudinal axis of said band for engaging and concentrating pressure on



and across a selected area of the muscles of a limb encircled by said strap.

4,243,029

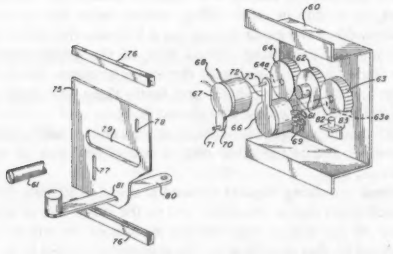
APPARATUS FOR AUTOMATIC VENTILATION OF THE LUNGS USING DUAL POTENTIOMETERS TO VARY THE POWER TO AN ELECTRIC MOTOR TO CONTROL THE INHALATION/EXHALATION RATIO

Wayne R. Apple, P.O. Box 3370, Denver, Colo. 80303

Division of Ser. No. 945,644, Sep. 25, 1978, which is a division of Ser. No. 815,659, Jul. 14, 1977, Pat. No. 4,141,355. This application Apr. 16, 1979, Ser. No. 29,987

Int. Cl.[3] A61M *16/00*

U.S. Cl. 128—204.21 7 Claims



1. In a respiratory machine having a piston type pump actuated by an electric motor to provide an inhalation stroke in one half cycle and an exhalation stroke in another half cycle, the improvement of

(a) a pair of potentiometers connected to the electric motor, each arranged for applying power to the motor during only a half cycle of the electric motor, and

(b) means arranged to vary the voltage of said potentiometers to change the power ratio of one half cycle to the other half cycle while maintaining the number of strokes per minute of the piston constant.

4,243,030

IMPLANTABLE PROGRAMMED MICROINFUSION APPARATUS

Harry J. Lynch, Waltham, Mass., and Robert W. Rivest, Montreal, Canada, assignors to Massachusetts Institute of Technology, Cambridge, Mass.

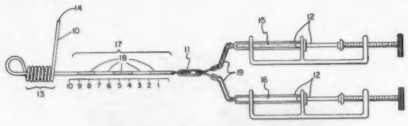
Filed Aug. 18, 1978, Ser. No. 935,060

Int. Cl.[3] A61J *7/00*

U.S. Cl. 128—213 R 6 Claims

1. In an apparatus implantable in an animal which delivers an infusate to the animal, said apparatus including a pump section that exerts a relatively constant pressure on a fluid located within said pump, the improvement which comprises:

(a) a tube attached to said pump, the interior of said tube being in fluid communication with said fluid located within said pump and



(b) an infusate located within the interior of said tube, said infusate being divided into segments which are separated by a second fluid located within the interior of said tube comprising a material other than said infusate, said infusate and said second fluid being immiscible thereby to maintain said segments separated within said tube.

4,243,031

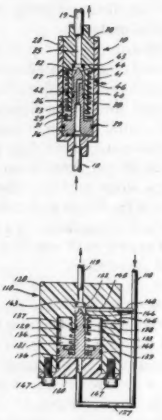
INTRAVENOUS PUMP FILTER PROTECTOR

Joseph N. Genese, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 18, 1978, Ser. No. 970,286

Int. Cl.[3] A61M *5/00*

U.S. Cl. 128—214 E 15 Claims



1. A pressure activated shut-off device for an intravenous fluid administration set comprising:

a housing defining a piston chamber with a large dimensional cavity and a small dimensional cavity;

a piston member defined by a piston head and a piston arm, said piston head constructed and arranged for slidable and sealable engagement in said large dimensional cavity and said piston arm for slidable engagement in said small dimensional cavity;

means operatively positioned in said housing and contacting said piston member for biasing said piston member in a direction away from said small dimensional cavity said biasing means providing a biasing force sufficient to be unaffected by a downstream pressure drop;

fluid passage means communicating with both said cavities including an outlet passage communicating with said small dimensional cavity;

a valve seat operatively associated with said small dimensional cavity and said outlet passage;

a valve closure defined by said piston arm for sealable contact with said valve seat; and

means to vent said large dimensional cavity;

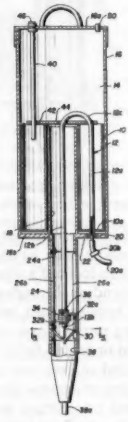
so that when a predetermined pressure is reached in said cavities said piston will move in the direction of said small dimensional cavity to cause said valve closure to contact said valve seat whereby fluid flow in said fluid passage means is stopped.

4,243,032

PARENTERAL FLUID ADMINISTRATION SETS

William L. Howell, 3615 Macomb St., NW., Washington, D.C. 20016

Filed Jan. 16, 1979, Ser. No. 3,923
Int. Cl.³ A61M 5/16
U.S. Cl. 128—214 C **8 Claims**



1. A floating siphon-type flow regulator for parenteral fluid administration sets incorporating a source of the fluid to be administered which is maintained at a high level relative to that of the regulator, said regulator comprising an upright, substantially cylindrical chamber-forming member closed at its ends by top and bottom end plates respectively, a float U-tube assembly comprising a float member and a siphon U-tube affixed to said float member, means preventing turning movement of said assembly about the axis of said chamber-forming member, whereby the shorter arm of the U-tube is constrained to move in an unvarying vertical path responsive to variations in the level of fluid present in the chamber-forming member, and means for introducing fluid from said source at a manually controllable rate to said member interior through the bottom end plate and at a point thereof which is vertically aligned with the bore of said shorter arm of the U-tube, being thereby effective to build up a body of the fluid on which said float U-tube assembly may float as a unit and simultaneously therewith to direct a portion of the so introduced fluid to and into the bore of the shorter U-tube arm.

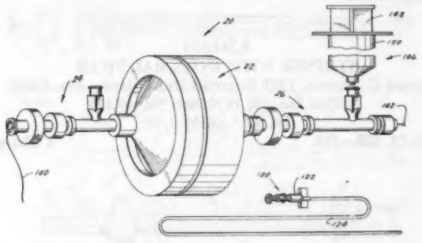
4,243,033

CATHETER DELIVERY SYSTEM

Vincent DeCaprio, Totowa, and George Sanderson, Clark, both of N.J., assignors to Becton, Dickinson and Company, Paramus, N.J.

Filed Jan. 29, 1979, Ser. No. 7,481
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214.4 **10 Claims**

1. Apparatus for delivering a small elongated flexible member into a body cavity comprising; a storage chamber open at both ends for containing substantially the entire length of the member to be delivered with one end extending through the opening at the forward end of the chamber and the other end extending through the opening at the rear end of the chamber, first valve means attached to the rear end of the chamber and having a passageway therethrough in communication with the interior of the chamber so that extension of the other end of the member through the valve means and closing of the valve will retain the other end of the member in fixed position, nozzle means attached to the forward end of the chamber and having a passageway therethrough in communication with the interior of said chamber, second valve means on the nozzle means and shiftable between an open position and a closed position so that when the second valve means is in the closed position it will fix the one end of the member in position when extended through the nozzle means from the chamber, and fluid pressure means adapted to be connected to a source of fluid pressure and to



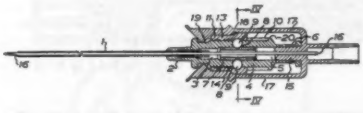
direct fluid through the nozzle means so that when the second valve means is in the open position the one end of the member and a portion in the chamber would be delivered through the forward end of the nozzle and from the apparatus, the fluid pressure means including a port in the nozzle means providing entrance to the fluid passageway through the nozzle, the second valve means being located between the chamber and the fluid pressure means so that when the second valve means is in the closed position the one end of the member will remain in fixed position during passage of fluid through the nozzle in either direction in response to actuation of the fluid pressure means, and the storage chamber being removably attached to the nozzle means to facilitate removal of the chamber after delivery of the member and permit use of the nozzle means independent of the storage chamber.

4,243,034

CANNULA OR CATHETER ASSEMBLY

Werner J. Brandt, Helsingborg, Sweden, assignor to Viggo AB, Helsingborg, Sweden

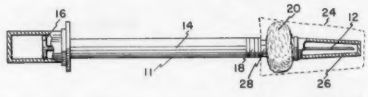
Filed Oct. 15, 1979, Ser. No. 85,153
Claims priority, application Sweden, Oct. 17, 1978, 7810807
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214.4 **5 Claims**



1. A cannula or catheter assembly having a cannula or catheter tube (**1, 22**) to be inserted in a patient, and a socket (**2, 23**) therefor which has a straight passageway (**3, 24**) to which the tube is connected, wherein a connecting housing (**4, 27**) is formed integral with or is releasably attached to the socket (**2, 23**) and has a straight through-channel (**5, 28**) which is surrounded by a wall and is coaxial with the passageway of the socket and connected at one end to said passageway, its opposite end being provided with connecting means (**6, 29**) for

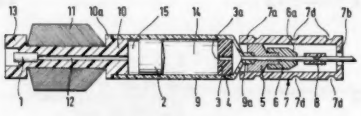
coupling a hose, a syringe or the like, wherein said through-channel of the connecting housing accommodates an easily flexible hose section (**7, 31**) sealing against the channel wall, wherein the wall of the connecting housing that surrounds said channel is provided at a location between the ends of said hose section with at least one through-opening in which a pressure body (**9, 32**) is movable between one position at which said pressure body projects into said channel and maintains a portion of the hose section in a compressed closing state, and another position in which said portion of the hose section is substantially unaffected by said pressure body, and wherein a slide member (**11, 35**) mounted on the outer side of the wall surrounding said channel is movable back and forth in the longitudinal direction of the channel and has an oblique surface (**14, 33**) facing said pressure body and adapted, when said slide member is moved to displace the pressure body between said two positions.

4,243,035
SYRINGE WITH INTEGRAL SWAB
Howard G. Barrett, 1215 Briercliff Dr., Orlando, Fla. 32806
Filed Jun. 18, 1979, Ser. No. 49,129
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—215 **4 Claims**



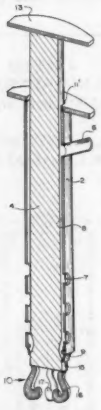
1. A hypodermic syringe and integral antiseptic dispenser, said syringe having a barrel portion adapted to contain fluid to be injected, a needle operatively mounted on one end of said barrel, and a plunger located on the other end of said barrel portion, with manipulation of said plunger bringing about the injection of fluid from said needle, the improvement comprising a presoaked antiseptic dispenser disposed on said barrel portion, said antiseptic dispenser making it convenient to clean the intended injection site immediately before the injection, said antiseptic dispenser taking the form of a pad encircling the barrel portion of the syringe.

4,243,036
AUTOMATIC INJECTING PROJECTILE
Peter Ott, Bahnhofstrasse 9, CH-4106 Therwil, Switzerland
Filed Aug. 9, 1979, Ser. No. 65,233
Claims priority, application Switzerland, Jun. 29, 1979, 6104/79
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—215 **7 Claims**



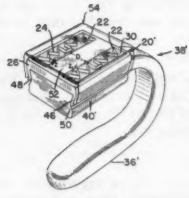
1. Automatic injecting projectile to be fired from rifles and handguns, with a hollow, cylindrical casing, separated into a pressure chamber and a chamber containing the drug by a piston sliding loosely within the casing, where one end of the casing is equipped with stabilizers and a propellant, and the other end having a hollow needle, characterized by having a check valve (**1**) on the end away from the hollow needle (**5**), said check valve (**1**) being connected with the pressure chamber (**15**) of the casing (**9**) through a channel (**12**) in order to introduce a fluid gas propellant via the check valve (**1**) into the pressure chamber (**15**) before the injecting projectile is fired.

4,243,037
FECAL IMPACTION REMOVER
Norma J. Smith, 1001 King St., Plaquemine, La. 70764
Filed Jul. 2, 1979, Ser. No. 54,285
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—303 R **3 Claims**



1. A device for breaking up impacted fecal in a rectum comprising an outer hollow tube having a cavity extending therethrough into which is located a plunger assembly having a rod means slidingly extending through said cavity and shaped to form a passageway between said tube and said rod, said plunger assembly having prong means attached at one end of said rod to break up said impacted fecal, said tube comprises a connecting means located at one end of said tube opposite prong means for receiving an enema solution, said connecting means having a channel connecting to said passageway to allow said enema solution to flow into said passageway and wherein said tube comprises openings connected to said passageway and located at another end section opposite said connecting means allowing said enema solution to flow from said passageway to said rectum.

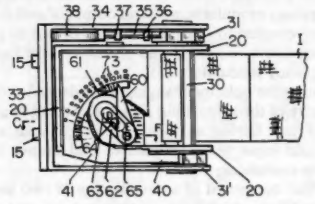
4,243,038
SKIN INCISING DEVICE FOR SCAR REMOVAL
Donn B. Harnick, 228 S. Barry Ave., Mamaroneck, N.Y. 10543
Filed Mar. 23, 1979, Ser. No. 23,291
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—305 **13 Claims**



1. A skin incising device for scar removal comprising:
(a) a holder;
(b) a first cutting member having an elongated relatively thin blade element with a continuous cutting edge characterized by a plurality of transversely disposed corrugations, the said corrugations being generally triangular in cross-sectional profile with at least one corrugation being rectangular in cross-sectional profile,
said cutting member mounted on said holder such that the cutting edge projects outwardly therefrom; and

(c) a removable imprint means for transferring at least one substantially identical image of the incision pattern produced by the transversely disposed corrugations of the cutting member and a releasabe fastening means for releasably fastening the imprint means to the holder.

4,243,039
EMERGENCY TOURNIQUET
Yacov Aginsky, 18 Rachel St., Haifa, Israel
Filed Jun. 13, 1979, Ser. No. 48,086
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—327 **10 Claims**



1. An emergency tourniquet for controlling hemorrhage from a limb such as an arm or a leg, comprising a strap, a strap-tightening mechanism and a pressure-indicating device integral with the tightening mechanism, wherein

said tightening mechanism consists of a rigid front part firmly and permanently attached to the front end of said strap, and a rigid rear portion carrying near its rear end a slotted spool which latter is adapted to be unidirectionally rotated by a pawl and ratchet mechanism and, by this rotation, to wind up the rear end of said strap wound around the limb, to shorten and tighten said strip around said limb and thereby exerting circumferential pressure on said limb, said front portion and said rear portion being slidingly connected and pressed towards each other by at least one compression spring so dimensioned as to permit a rearward movement of the rear portion relative to the front portion proportionally to the pull exerted by the tightened strap,

said pressure indicating device being in the form of a scale combined with pointer means indicating on said scale the pull of said strap end, said scale being provided with marks indicating the permissible pull, related to the circumferential pressure to be exerted on an arm and a leg respectively for at least two different diameters of an arm and a leg respectively.

4,243,040
EXTRACTING DEVICE FOR REMOVING OBJECTS FROM HUMAN BODY PASSAGES
William H. Beecher, 292 Boyd Ave., Elmhurst, Ill. 60126
Continuation of Ser. No. 767,696, Feb. 11, 1977. This application Sep. 17, 1979, Ser. No. 76,150
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—328 **20 Claims**

1. An extracting device for insertion into a human body passage for removing foreign objects therefrom,

said device comprising an outer flexible tube the distal end of which is insertable into a body passage,

an inner flexible tube having a greater length than and slideably received within said outer tube for free longitudinal sliding movement with the distal end of said inner tube normally projecting beyond the distal end of said outer tube,

said inner and outer tubes having clearance space therebetween for carrying fluid under pressure,

a thin tubular highly distendable and limp sleeve having its proximal end portion connected to said distal end of said outer tube,

said sleeve having a distal end portion which is inverted and is connected to the distal end of said inner tube for insertion into the body passage,

said sleeve being otherwise free to expand upon inflation,

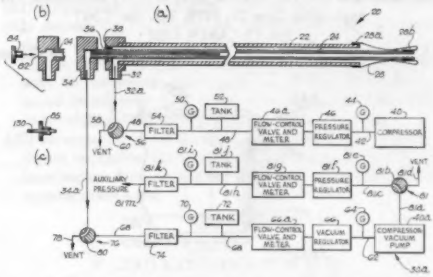
said tubular sleeve having first and second tubular surfaces on opposite sides of said sleeve,

said first surface facing inwardly at said proximal end portion of said sleeve,

said inverted distal end portion of said sleeve being turned inside out with said second surface facing inwardly,

said sleeve being inflatable by fluid transmitted along said clearance space to dilate the body passage,

said sleeve when inflated having an annular flaring portion bulging beyond the distal end of said inner tube and



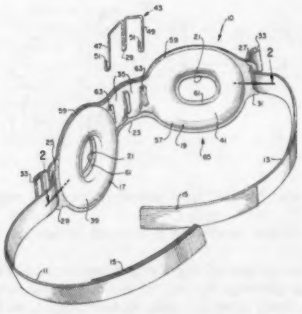
curved convexly in longitudinal section for sealing engagement with a foreign object in the body passage,

said annular flaring curved portion being soft, pliable and capable of conforming to the shape of the foreign object to effect a seal therewith,

said inner tube being operative to transmit suction for capturing and holding the foreign object in sealing engagement with said annular flaring portion of said sleeve,

and means for retracting said inner tube relative to said outer tube while the suction pulls the foreign object within the confines of said sleeve and said sleeve is progressively turned inside out around the foreign object to envelop the foreign object for removal with said tubes.

4,243,041
COLD-PACK GOGGLES
Malcolm D. Paul, 111 Via Undine, Newport Beach, Calif. 92663
Continuation of Ser. No. 864,030, Dec. 23, 1977, abandoned, which is a continuation of Ser. No. 722,188, Sep. 10, 1976, abandoned. This application Apr. 5, 1979, Ser. No. 27,447
Int. Cl.³ A61F *7/00*
U.S. Cl. 128—402 **4 Claims**



1. A cold therapy pack comprising:

goggle-shaped eyepieces joined together by a nose bridge,

said eyepieces comprising two layers of thermoplastic sheets heat sealed around their periphery to form a hydrophilic gel compartment between said sheets;

a separate nose pack comprising a plurality of hydrophilic gel compartments and means for attaching same; and

detachable Velcro straps for securing said pack tightly around the head of a patient.

4,243,042

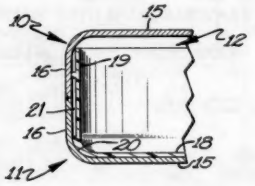
ENCLOSURE SYSTEM FOR BODY IMPLANTABLE ELECTRICAL SYSTEMS

Lyle A. Ware, Bloomington, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 793,638, May 4, 1977, abandoned. This application Jan. 29, 1979, Ser. No. 7,307

Int. Cl.³ A61N 1/02

U.S. Cl. 128—419 P **10 Claims**



1. In a body implantable electrical stimulator of the type having interconnected electrical components housed within a preformed enclosure, the enclosure having a plurality of members at least one of which has a main wall and a side wall joined at a radius, the improvement which comprises cup means formed of a main wall and a side wall, said cup main wall being generally coextensive with at least a major portion of said enclosure member main wall and said cup means side wall encircling said components, said cup means further comprising means engaging said enclosure member radius for mechanically limiting movement of said cup means within said enclosure.

4,243,043

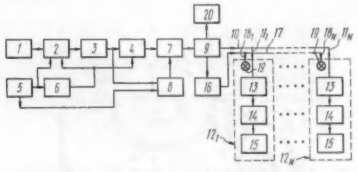
APPARATUS FOR ELECTRICAL STIMULATION OF MAMMAE

Viktor V. Sevastianov, ulitsa Komsomolskaya, 96, kv. 31, Ioshkar-Ola, and Eduard K. Kazimirov, Brest-Litovsky prospekt, 12, kv. 133, Kiev, both of U.S.S.R.

Filed Jul. 11, 1979, Ser. No. 56,516

Int. Cl.³ A61N 1/36

U.S. Cl. 128—422 **7 Claims**



1. An apparatus for electrical stimulation of the mammae, comprising:

a master oscillator producing a train of pulses, having an output;

a frequency modulator adapted to perform frequency modulation of the pulses generated by said master oscillator and having an input, control inputs, and an output, said input being coupled to said output of said master oscillator;

a stimulating pulse generator producing pulses of a given length and shape, corresponding to respective pulses obtainable from said master oscillator; an input and an output of said stimulating pulse generator, said input being coupled to said output of said frequency modulator;

an amplitude modulator in which said generated train of pulses is subject to amplitude modulation; an input, a control input and an output of said amplitude modulator, said input being coupled to said output of said stimulating pulse generator;

a modulating signal generator having outputs;

a unit adapted to form excitation and space periods and having an input and an output, said input being coupled to a first one of said outputs of said modulating signal generator, which is coupled to a first one of said control inputs of said frequency modulator, and said output of said forming unit being coupled to said control input of said amplitude modulator and to a second one of said control inputs of said frequency modulator;

a stimulating pulse polarity changing unit adapted to change the polarity of the stimulating pulses according to a given law, said unit having an input, a control input and an output, said input being coupled to said output of said amplitude modulator;

an output unit comprised of a combination of two unipolar signal amplifier, which have a common load, said output unit being adapted to produce an output signal with its polarity changed according to a given law, and having an input and an output, said input being coupled to said output of said stimulating pulse polarity changing unit;

a distributing line relating to N points subject to electrical stimulation and having leads connected to each of said N points;

an automatic stimulating pulse polarity control unit operated to realize a given law of changing the polarity of the output signal and having inputs and an output, said output being coupled to said control input of said stimulating pulse polarity changing unit, and said inputs being coupled to said output of said stimulating pulse generator and to said second output of said modulating signal generator, respectively;

said output of said output unit coupled to said distributing line;

a stimulating pulse amplitude adjustment circuit having an input and an output and designed for each of said points subject to electrical stimulation;

a matching unit having an input and an output;

surface-type electrodes;

said input of said stimulating pulse amplitude adjustment circuit, coupled to a respective lead, and said output of said stimulating pulse amplitude adjustment circuit, coupled to said input of said matching unit;

said output of said matching unit, coupled to said surface-type electrodes.

4,243,044

COUPLING CIRCUIT WITH DRIVEN GUARD

Timothy B. Blancke, Concord, Mass., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 7, 1978, Ser. No. 940,403

Int. Cl.³ A61B 5/04

U.S. Cl. 128—696 **6 Claims**

1. A circuit for coupling the difference between potentials supplied by two electrodes in contact with the body of a patient and conducted by shielded leads to the inputs thereof to an output referenced to ground in such manner as to minimize the effect of any common mode voltage and provide a high impedance between the patient and ground without requiring the attachment of another electrode to the patient, comprising

a point of ground potential,

a point of floating ground potential,

two input terminals to which electrode leads may be respectively attached,

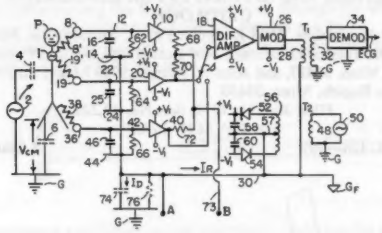
a differential amplifier circuit having two inputs and an

output, said inputs respectively coupled to said input terminals,

a power supply coupled to provide operating potentials for said differential amplifier circuit, said power supply being referenced to said point of floating ground potential,

output terminals, one of which is connected to said point of ground potential,

means coupling the differential amplifier signals at the output of said differential amplifier to said output terminals, said coupling means maintaining a high impedance to ground for the common mode signals at the output of said differential amplifier,



a terminal to which shields of electrode leads may be attached, said terminal being connected to said point of floating ground potential, and

a unity gain amplifying circuit means referenced to ground, said unity gain amplifying circuit means having an input connected by means exclusive of the body of a patient to a point in said differential amplifier circuit at which common mode voltages may appear and an output connected to said point of floating ground potential, the said unity gain amplifying circuit means having means for limiting current flowing between ground and both its input and its output, said latter means limiting the current that can flow to a value that is low enough to protect the patient from electrical shock.

4,243,045

METHOD AND APPARATUS FOR THE SUPPRESSION OF INTERFERENCE SIGNALS IN A USEFUL SIGNAL

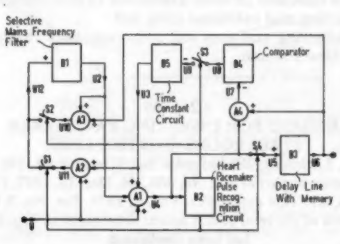
Michael Maas, Uttenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 23, 1979, Ser. No. 5,865

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1978, 2805681

Int. Cl.³ A61B 5/04

U.S. Cl. 128—696 **17 Claims**



1. A method for suppressing noise signals in a useful signal, said method comprising the steps of:

(a) supplying an input signal comprising a useful signal (U1) which is subject to a noise hum signal (U_N) and to noise in the form of narrow noise pulses (P) of high amplitude which may be superimposed on the noise hum signal (U_N);

(b) monitoring said input signal to sense the presence of a narrow noise pulse (P);

(c) in the absence of the sensing of such a narrow noise pulse (P):

(c1) suppiying the input signal to a noise hum filter (B1) to derive from the input signal a filtered-out interference hum component (U2) corresponding in waveform as a function of time to said noise hum signal (U_N); and

(c2) superimposing on the input signal in opposing relation said filtered-out interference hum component (U2) to tend to suppress the noise hum signal (U_N); and

(d) in the response to the sensing of such a narrow noise pulse (P) pursuant to step (b):

(d1) suppressing such narrow noise pulse;

(d2) decoupling the noise hum filter (B1) from the input signal, and switching over said noise hum filter (B1) to self-oscillation operation such that it continues to oscillate with the amplitude and frequency of the previously selected interference hum component without a phase jump to supply an artificially produced oscillation; and

(d3) superimposing on the input signal said artificially produced oscillation for the purpose of compensation of the interference hum during the period of supression of said narrow noise pulse.

4,243,046

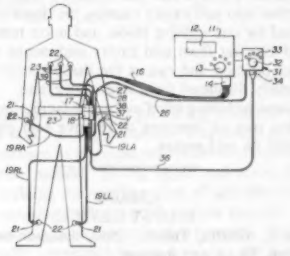
V LEAD EXTENDER FOR ECG

Belson J. Weinstein, Palo Alto, and Bruce H. Hyndman, Newark, both of Calif., assignors to Belson J. Weinstein, Palo Alto, Calif.

Filed Aug. 6, 1979, Ser. No. 63,841

Int. Cl.³ A61B 5/04

U.S. Cl. 128—709 **5 Claims**



1. Apparatus for extending the V lead of an ECG instrument of the single channel type having a driven chart, a stylus for marking characteristic electrocardiographs on said chart, a plurality of lead wires connected to said instrument, including a single "V" lead, means for attaching the distal of at least some of said leads to the skin of a patient, electrical means for supplying voltage to said leads and also for driving said stylus and a first selector switch for serially connecting said leads to said instrument, said first switch having a "V" position connecting said "V" lead to said instrument,

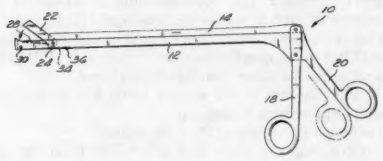
the improvement which comprises a conductor, means for connecting said V lead to said conductor, a second selector switch having a movable central contact connected to said conductor and a plurality of stationary contacts, a plurality of auxiliary patient leads, each said auxiliary lead being connected at a first end to one of said stationary contacts and at its distal to second means for attachment to the skin of said patient at a plurality of V positions, whereby when said instrument first selector switch is at "V" position, by serially turning said movable central contact readings at each of said plurality of V positions may be obtained on said chart.

4,243,047

INSTRUMENT FOR TAKING TISSUE SPECIMENS

C. Eric Olsen, Ventura, Calif., assignor to Auburn Enterprises, Inc., Ventura, Calif.

Filed Feb. 7, 1979, Ser. No. 10,174
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—751 **5 Claims**



1. An instrument for taking tissue specimens comprising:

a first elongated member having a first fore end and a first aft end;

a second elongated member having a second fore and and a second aft end, said first and second elongated members being connected together and movable in relation to each other, said aft ends cooperating to form a manually graspable section for causing relative movement of said first and second elongated members;

said first fore end including a cavity, said cavity being formed by a sidewall, said sidewall having an outer edge, said outer edge including a cutting blade, said second fore end including a third member movable into and out of said cavity, means located within said cavity, said means being movable within said cavity between a lower position and an upper position, said lower position establishing the maximum size of said cavity, said upper position establishing the minimal size of said cavity, whereby a tissue specimen is to be forced into said cavity by moving of said third member into said cavity causing the tissue specimen to be served by said cutting blade, and upon removing of said third member from said cavity said means moves to said upper position and causes the tissue specimen to be substantially displaced from said cavity; and

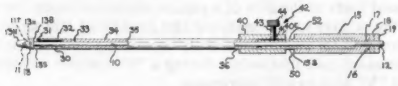
said means including relief means for facilitating cooperation with a pair of tweezers to remove said tissue specimen located on said means.

4,243,048

BIOPSY DEVICE

Lawrence C. Griffin, Toledo, Ohio, assignor to Jim Zegeer, Arlington, Va., a part interest

Continuation of Ser. No. 168,415, Aug. 2, 1971, abandoned, which is a continuation of Ser. No. 857,858, Sep. 15, 1969, abandoned. This application Sep. 21, 1976, Ser. No. 725,300
Int. Cl.³ A61B *17/36*
U.S. Cl. 128—751 **2 Claims**



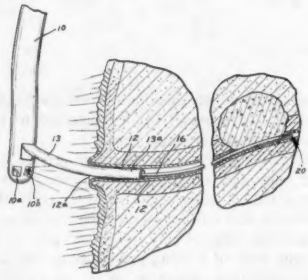
1. A surgical device for extracting a biopsy specimen from the endocervical canal of females without surgery or dilation and enlargement thereof, comprising an elongated shaft, a rounded plastic member shaped as a guiding protuberance for entrance to the endocervical canal of a female, said plastic member being secured to the end of said elongated shaft, a hollow metallic tubular blade member telescopically fitted on said shaft for sliding and rotary motion along and about the longitudinal axis of said elongated shaft, an annular cutting element on the end of said tubular blade member, said hollow blade member having an internal diameter which is larger than the external diameter of said elongated shaft so as to form a specimen receiving chamber, said guiding protuberance having a planar trailing surface which can be cut or scored by said annular cutting element to assure complete and clean severance of the specimen so that on withdrawal of the device from the endocervical canal of the female there is no pulling and tearing of tissue and no inadvertent spreading of possibly diseased tissue and cells during removal of the said device from the endocervical canal, and wherein said plastic member is constituted by a material which will tend to decompose in the prolonged presence of animal tissue.

4,243,049

METHOD AND APPARATUS FOR EXFOLIATIVE CYTOLOGY

Robert L. Goodale, 1903 Kenwood Pkwy., Minneapolis, Minn. 55405; Thomas D. Dressel, 1409 Zealad Ave. North, Minneapolis, Minn. 55427, and John W. Borner, 9960 Linnet St. NW., Coon Rapids, Minn. 55433

Filed Jun. 11, 1979, Ser. No. 47,222
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—757 **8 Claims**



1. The method for exfoliative abrasion of cells from the inner portions of the pancreatic duct and other inaccessible anatomical locations;

said method including the following steps;

providing a serrated rasp element of a diameter less than 1.0 mm,

inserting an endoscope down through the patient's mouth, esophagus, and stomach to locate the lower end thereof in substantially opposed relation to the entrance to the pancreatic duct,

providing flexible operating means for said rasp element,

inserting said operating means and rasp element downwardly through said endoscope and through the entrance of said pancreatic duct,

engaging the epithelium of the desired ductal areas by a scraping action of the serrated rasp element to abrade the same and produce exfoliation of cells therefrom,

collecting said exfoliated cells, and

withdrawing said rasp and endoscope back through the patient's mouth.

4,243,050

METHOD FOR INSERTING PACEMAKER ELECTRODES AND THE LIKE

Philip O. Littleford, 251 Salvador Sq., Winter Park, Fla. 32789

Continuation-in-part of Ser. No. 860,246, Dec. 13, 1977, Pat. No. 4,166,469. This application Feb. 5, 1979, Ser. No. 9,137
The portion of the term of this patent subsequent to Sep. 4, 1996, has been disclaimed.
Int. Cl.³ A61N *1/18*
U.S. Cl. 128—784 **4 Claims**

1. A method for the rapid and atraumatic implantation of a permanent pacemaker into a patient, comprising the steps of:

providing an encapsulated pulse pacing generator having a

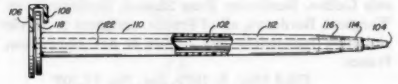
receptacle, and further providing a permanent pacemaker electrode having an electrode tip and a connector plug cooperable with the receptacle of the encapsulated pulse pacing generator;

providing a hollow needle, a flexible guide wire dimensioned to pass through said needle, a tubular introducer having a central hole larger than said wire and a taper at its forward end, and a hollow sleeve about said introducer with means providing a flange at one end of said sleeve opposite said forward end of said introducer, with a longitudinal slit along only a portion of said sleeve and extending through said flange means so as to terminate short of the forward end of said sleeve;

inserting the needle into a subclavian vein of the patient;

thereafter passing the flexible guide wire through the needle and into the subclavian vein and toward the heart;

thereafter removing said needle while leaving said guide wire in the subclavian vein;



positioning said sleeve on said introducer such that the unslit forward end of said sleeve terminates short of said taper to thereby avoid trauma and tearing of the subclavian vein when said introducer and sleeve are subsequently inserted therein;

thereafter sliding said introducer and said sleeve together along said guide wire and into the subclavian vein;

thereafter removing said guide wire and said introducer, leaving said sleeve in the subclavian vein;

thereafter passing said permanent pacemaker electrode down said sleeve into the subclavian vein and then into the heart so as to position said electrode tip in the heart;

thereafter grasping and pulling said flange means away from said electrode and the longitudinal direction of said slit for peeling said sleeve away from said electrode and tearing the unslit portion of said sleeve for removing said sleeve from the electrode;

connecting the connector plug of the electrode to the receptacle of the encapsulated pulse generator; and

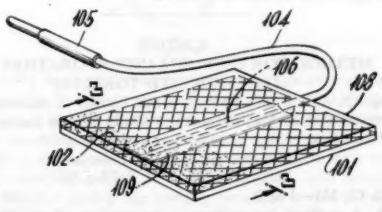
implanting the pulse generator into the patient.

4,243,051

DISPOSABLE ELECTRODE

Robert F. Wittemann, New Brunswick, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 8, 1979, Ser. No. 1,501
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—798 **2 Claims**



1. A transcutaneous electrode providing electrical contact with a patient's skin, having substantial uniformity of current density and resistance to physical deformation comprising:

(a) a conductive member having upper and lower surfaces and generally defining the configuration of said electrode;

(b) an electrically conductive adhesive material, electrically and physically connected to and covering the lower surface of said conductive member, for interfacing said conductive member with the patient'skin;

(c) electrical connection means for physically and electrically coupling said conductive member with an external electrical apparatus, said connection means including an electrical conductor joining said conductive member at a contact point along a side of said conductive member, thence extending away from said point substantially across the lower surface of said conductive member, said electrical conductor being in electrically conductive relation with said conductive member substantially across said lower surface; and

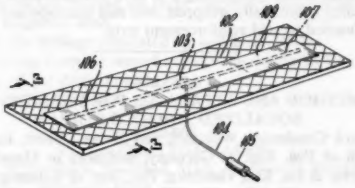
(d) an electrically insulating tape reinforcing means overlaying the full length of said electrical conductor and simultaneously being bonded to said lower surface.

4,243,052

DISPOSABLE ELECTRODE

William D. Bailey, Wayzata, Minn., assignor to Stimtech, Inc., Minneapolis, Minn.

Filed Jan. 8, 1979, Ser. No. 1,502
Int. Cl.³ A61N *1/04*
U.S. Cl. 128—798 **2 Claims**



1. A transcutaneous electrode providing electrical contact with a patient's skin, having substantial uniformity of current density and resistance to physical deformation comprising:

(a) a conductive member having upper and lower surfaces generally defining the configuration of said electrode and having an opening in the central portion thereof;

(b) an electrically conductive adhesive material, electrically and physically connected to and covering the lower surface of said conductive member, for interfacing said conductive member with the patient's skin;

(c) electrically nonconductive backing means laminated to the upper surface of said conductive member, and defining the configuration of said electrode, said backing having an opening in the central portion thereof;

(d) electrical connection means for physically and electrically coupling said conductive member with an external electrical apparatus, said connection means including

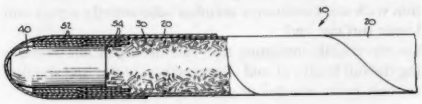
(i) a stranded wire, penetrating said backing means central opening and further penetrating said conductive member central opening, thence dividing into two strands which extend in opposite directions away from said conductive member central opening, spanning between substantially opposite extremes of said conductive member and in physical and electrically conductive relation with said lower surface of said conductive member, and

(ii) electrically insulating reinforcing tape means overlaying said two strands and holding them in physical contact to said lower surface of said conductive member.

4,243,053
FILTER CIGAR

William F. Cartwright, Manchester; Alan Cornell, Bloomfield, both of Conn.; D. Bernard Higgins, Berwick, Pa., and Robert P. Mikkelson, East Hartford, Conn., assignors to Gulf & Western Company, New York, N.Y.

Filed Feb. 5, 1979, Ser. No. 9,612
Int. Cl.[3] A24D 1/10
U.S. Cl. 131—4 A 4 Claims



1. An improved filter cigar of the type wherein a preformed, cylindrically shaped filter is tightly mated with a tobacco filler charge both integrally wrapped in sheets of cigar binder and cigar wrapper material, wherein the improvement comprises:

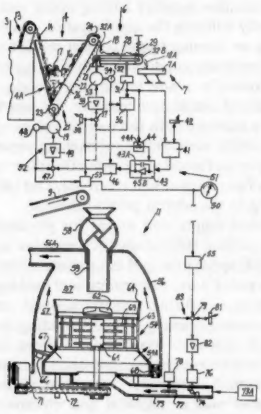
reinforcement means for preventing separation between said filter and said filler charge, said reinforcement means comprising a strip of high wet strength material circumferentially wrapped over the interface between the filter and filler charge and directly bonded to the binder on both sides of said interface; and

flame extinguishment means to extinguish the flame of said cigar prior to ignition of said filter, said flame extinguishment means comprising a strip of nonflammable material circumferentially wrapped over said interface and directly bonded to said reinforcement strip.

4,243,054
METHOD AND APPARATUS FOR FORMING AN EQUALIZED TOBACCO STREAM

Gerhard Graalmann, Wohltorf, and Heinz Siebert, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Sep. 17, 1979, Ser. No. 76,208
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1978, 2841470
Int. Cl.[3] A24B 7/14; G01G 11/08
U.S. Cl. 131—22 R 22 Claims

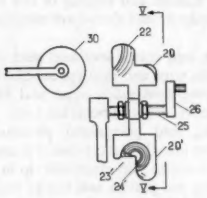


1. A method of building an equalized tobacco stream wherein the weight of each unit length at least approximates a predetermined weight, comprising the steps of respectively conveying successive unit lengths of a tobacco stream at variable first and second speeds along first and second portions of an elongated path; weighing successive unit lengths in said second portion and generating a first series of signals denoting the weight of the respective unit lengths; monitoring said second speed and generating a second series of signals denoting the speed of successive unit lengths in said second portion; utilizing said first and second signals for the generation of third signals which vary as a function of changes in the weight and/or speed of successive unit lengths; varying said second speed when the characteristics of said third signals deviate from a predetermined value; and varying the ratio of said first and second speeds as a function of the extent and duration of deviation of the characteristics of signals of one of said series from a preselected value.

4,243,055
METHOD AND DEVICE FOR WRAPPING CLOSED TIP CIGARS

Jean Bossuet, Carbon Blanc; Jean Godet, Bordeaux; Jean-Francois Guiton, Bordeaux; Rene Sizarol, Bordeaux, and Pierre Waegaert, Bordeaux, all of France, assignors to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Mar. 5, 1979, Ser. No. 17,107
Claims priority, application France, Mar. 9, 1978, 78 06789
Int. Cl.[3] A24C 1/30, 1/32
U.S. Cl. 131—76 5 Claims



1. A device for mechanically wrapping closed tip cigars of the type in which the bunches are wound in the normal direction of the machine used when wrappers are to be employed which are cut out from a half-leaf corresponding to the "type" of the machine, i.e. "right-hand" or "left-hand", and said bunches are wound in the direction opposite said normal direction when wrappers are to be employed which are cut out from a half-leaf not corresponding to the type of the machine, said device comprising means for rotating a cigar bunch on itself, means for conducting a wrapper to the preceding means so that it is wound from the foot of said bunch to the tip thereof and shaping means for applying the end of the wrapper on the tip of said bunch so as to close said tip, wherein said shaping means comprise surfaces for guiding the end of the wrapper corresponding to the direction of guiding of the wrapper on the tip whatever this direction is.

4,243,056
METHOD FOR UNIFORM INCORPORATION OF ADDITIVES INTO TOBACCO

Roger Z. de la Burde, Powhatan, and Patrick E. Aument, Richmond, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 12, 1979, Ser. No. 2,981
Int. Cl.[3] A24B 3/18, 3/12, 3/00
U.S. Cl. 131—140 B 10 Claims

1. A method for uniform incorporation of additives into tobacco which comprises:

(a) dispersing an additive in liquid carbon dioxide;

(b) contacting tobacco with the resultant liquid carbon dioxide solution for a period of time sufficient to permit absorption of at least part of the solution by the tobacco;

(c) converting part of the liquid carbon dioxide absorbed by the tobacco to solid carbon dioxide; and

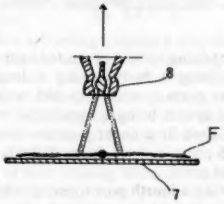
(d) allowing the solid carbon dioxide to evaporate.

4,243,057

PROCESS FOR SPREADING TOBACCO LEAVES

Huguette Peschel born Chaudron, Paris, and Robert Caffoz, Checy, both of France, assignors to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Aug. 30, 1977, Ser. No. 828,992
Claims priority, application France, Sep. 1, 1976, 76 26326
Int. Cl.³ A24B *3/18, 3/00*
U.S. Cl. 131—147 A 6 Claims



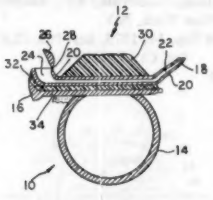
1. A method of spreading out a tobacco leaf comprising bringing a liquid into contact with the leaf while creating relative movement between the leaf and the liquid in a direction which effects spreading of the leaf.

4,243,058

JEWELRY SMOKING DEVICE

George Gershbein, 30 W. 69th St., New York, N.Y. 10023

Filed Jun. 27, 1974, Ser. No. 483,629
Int. Cl.³ A24F *3/00, 5/10*
U.S. Cl. 131—171 R 3 Claims



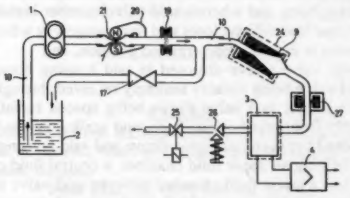
1. Jewelry smoking device comprising an ornamental pipe member in the form of an annular hollow member and adapted to be worn as an item of jewelry, the smoking device having a tobacco receiving portion for receiving smoking tobacco; a mouthpiece; and conduit means for carrying smoke from said tobacco receiving portion to said mouthpiece, said annular hollow member having one opening provided at one circumferential portion of said annular member and another opening provided at another circumferential portion spaced from said one opening, one of said openings forming said tobacco receiving portion and the other of said openings forming said mouthpiece portion; and thermal insulation means provided along the internal surface of said annular member, whereby the latter may be worn by a wearer without being exposed to the high temperatures reached in said hollow member.

4,243,059

METHOD AND DEVICE FOR DETERMINING THE HOMOGENEITY OF MAGNETIC DISPERSIONS

Fritz Hammon; Manfred Ohlinger, both of Frankenthal, and Job-Werner Hartmann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 22, 1978, Ser. No. 908,446
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726370
Int. Cl.³ G01R *33/12*
U.S. Cl. 137—2 15 Claims



1. A method of determining the homogeneity of a magnetic dispersion which comprises the steps of

subjecting the dispersion, while in the form of a flowing stream, to a magnetic field,

conducting the flowing magnetic dispersion past the air gap of a magnetic head,

sensing the voltage generated by said head, and

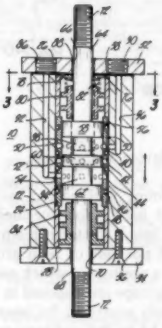
determining from the sensed voltage the degree of homogeneity of the dispersion.

4,243,060

FLUID CONTROL VALVE

Lorne J. McKendrick, Westland, Mich., assignor to Parts Handling, Inc., Dearborn, Mich.

Continuation of Ser. No. 799,041, May 23, 1977, abandoned.
This application May 1, 1979, Ser. No. 34,957
Int. Cl.³ F16K *11/07*; B66D *1/00*; F15B *13/04*
U.S. Cl. 137—625.69 6 Claims



1. A fluid control valve comprising:

a valve member;

a housing axially slidably disposed over said valve member, said housing having a first, second, and third fluid passageways open to said valve member, each of said fluid passageways being formed axially through the housing;

means for resiliently retaining said housing in a predetermined axial position relative to said valve member whereby said fluid passageways are disconnected from each other, said resilient retaining means being wholly contained within said housing;

wherein said valve member fluidly connects said first and second fluid passageways when said housing is moved in one axial direction from said predetermined position and wherein said valve member fluidly connects said first and third fluid passageways when said housing is moved in the other axial direction from said predetermined position;

wherein said valve member is a spool valve disposed in a bore formed in said housing;

wherein said housing has a bore in which the valve member is positioned and wherein said first, second, and third fluid passageways are fluidly connected to said housing bore at axially spaced positions, said first bore being axially positioned between said second and third passageways in said housing bore, and wherein said valve member includes at least one land which closes said first passgeway when said housing is in said predetermined position, and

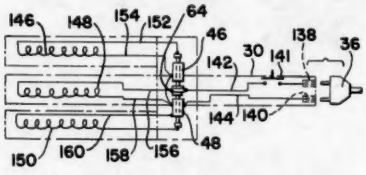
a tubular valve sleeve disposed in said housing bore, said spool valve being slidably sealingly received through said valve sleeve, said valve sleeve being spaced radially inwardly from said housing bore, and sealing means being disposed between said valve sleeve and said housing bore for defining an upper fluid chamber, a central fluid chamber and a lower fluid chamber between said valve sleeve and said housing bore, said fluid chambers being annular in cross section and axially adjacent each other, wherein said first passageway communicates with said central annular chamber while said second and third passageways repsectively communicate with the upper and lower annular fluid chambers, respectively, and at least one aperture formed through said valve sleeve for each of said annular chambers.

4,243,061

HAIR CURLING AND WAVING DEVICE

Glen W. Buchanan, 7049 Charing Ct., Dayton, Ohio 45424

Filed Feb. 23, 1979, Ser. No. 14,728
Int. Cl.³ A45D *2/24*
U.S. Cl. 132—37 R **13 Claims**



1. A hair waving device, comprising:

a handle;

first and second groups of elongated hair waving members mounted on said handle for intermeshing engagement, said first group being rotatable relative to said second group about end portions of both groups adjacent said handle, between a position in which said members of said first and second groups are disposed in a non-intermeshed position sufficiently separated for inserting a plurality of strands of hair and a position wherein said first and second groups are disposed in an intermeshed position wherein said strands of hair are alternately curved together in opposite directions about adjacent ones of said members; and

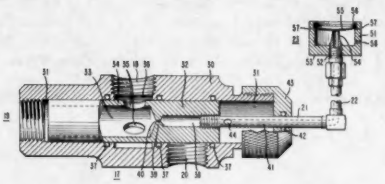
at least one elongated wave guide mounted to said handle for relative rotation with one of said groups of members and for sliding movement longitudinally thereof, said wave guide having means for engaging said hair for causing lateral displacement of a portion thereof longitudinally of said waving members a sufficient distance to impart a wave to the hair.

4,243,062

THERMOSTATIC SELF-POWERED DRAIN VALVE

Russell S. Shelton, Mt. Olive Township, Morris County, N.J., assignor to Sheltech, Inc., Springfield, N.J.

Filed Jul. 14, 1978, Ser. No. 924,848
Int. Cl.³ E03B *7/10*; F16K *31/38*
U.S. Cl. 137—62 **9 Claims**



5. A fluid containing system protected against extreme temperatures comprising a body having a longitudinal cavity therein and three ports opening into said cavity,

said protected system being connected to one of said ports, a source of fluid flow under pressure connected to a second of said ports, a drain for said fluids connected to a third of said ports,

said body having a fourth port opening into said cavity,

a transverse barrier slideably retained within said cavity and adapted for selectively coupling said one port to either said second port or said third port on one side of said barrier,

said barrier including an orifice for coupling said one port on one side of said barrier to the other side thereof and to said fourth port,

means utilizing hydraulic pressure present at said one port for reversing the coupling between said one port and said second and third ports,

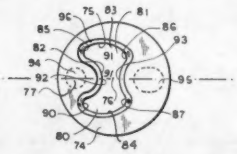
said means for reversing including thermally sensitive means for relieving hydraulic pressure at said fourth port to create unequal hydraulic pressures on opposite sides of said barrier whereby said barrier is moved longitudinally in the direction of said relieved pressure.

4,243,063

MIXING VALVE

Richard G. Parkison, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.

Filed Sep. 14, 1979, Ser. No. 75,619
Int. Cl.³ F16K *19/00*
U.S. Cl. 137—100 **9 Claims**



1. A mixing valve comprising a valve seat having a hot fluid aperture, a cold fluid aperture and a discharge aperture formed therein, a plate having a surface abutting said valve seat and rotatable relative thereto, said plate having a cavity formed in said abutting surface, said cavity having a pair of lobes each of said lobes being disposed on an opposite side of an axis and being axisymmetric therewith, said lobes being asymmetric with respect to an axis that is perpendicular to said axis of symmetry and having one portion of each of said lobes having a substantially larger volume than the other respective lobe portions, the each said larger volume lobe portion being offset

in the same direction relative to the center of said plate toward said plate perimeter, said lobes each having rounds formed at the ends thereof to provide a smooth development to a waist-like transition that joins said lobes together at said ends to enable the portion of one of said lobes that is offset toward said plate perimeter to register with one of said cold fluid or hot fluid valve seat apertures before the other lobe registers with the other of said cold fluid or hot fluid in order to establish fluid communication therethrough.

6. A mixing valve according to claim **1** further comprising a manifold, a cold water inlet fitting establishing fluid communication with said manifold, a hot water inlet fitting establishing fluid communication with said manifold, a pressure balancing valve coupled to said manifold for adjusting the volumes of cold- and hot-water flow through said manifold, a hot water discharge connecting said pressure balancing valve with said valve seat hot water aperture, and a cold water discharge for connecting said pressure balancing valve with said valve seat cold water aperture.

7. A mixing valve according to claim **6** wherein said pressure balancing valve further comprises a housing having a hot water inlet, a cold water inlet and a chamber in fluid communication with said hot- and cold-water pressure balancing valve inlets, a pressure balancing spool within said housing and slidable therewithin, said spool having two grooves formed in the surface thereof, said grooves being appreciably wider than a respective one of said housing inlets, a land separating said grooves, said land being substantially narrower than the separation between said housing inlet, a pair of further lands each disposed on a respective opposite end of said spool, and each said further lands being at least as wide as said respective housing inlet, said spool having two bores formed therein, each of said bores establishing fluid communication for the hot- and cold-water through said spool, and a pair of further bores formed in said spool, each to establish fluid communication between a respective one of said hot- and cold-water bores and said housing chamber.

4,243,064

BYPASS VALVE FOR PUMPS, HEATING SYSTEMS AND THE LIKE

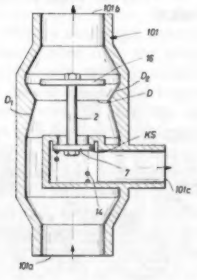
Ewald Nolte, Bielefeld, Fed. Rep. of Germany, assignor to Tuxhorn KG, Bielefeld, Fed. Rep. of Germany

Filed Apr. 20, 1978, Ser. No. 898,340

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1977, 2725044; Jan. 27, 1978, 7802444[U]

Int. Cl.³ G05D *11/00*

U.S. Cl. 137—117 **6 Claims**



1. A bypass valve for regulating the flow of a fluid, comprising a valve member having an axis and including a larger-diameter main valve portion and a smaller-diameter bypass valve portion rigid with and axially spaced from said main valve portion; and a housing having a fluid-admitting inlet, a fluid-discharging main outlet aligned with said inlet, a passage communicating said inlet with said main outlet, a fluid-discharging bypass outlet communicating with said passage intermediate said inlet and said main outlet, and a valve seat for said bypass valve portion at said bypass outlet, said housing accommodating said valve member for axial displacement between a first end position in which said bypass valve portion engages, and a second end position in which said bypass valve portion is axially spaced from, said valve seat, said passage having, as considered in the flow direction, a diverging section accommodating said main valve portion with a clearance in all positions of said valve member so that the fluid flows past said main valve portion at rates which gradually increase as said valve member is displaced from said second toward said first end position thereof, and a converging section situated upstream of said diverging section and directing the flow of the fluid against said main valve portion.

4,243,065

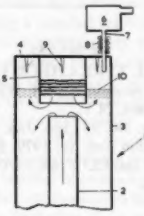
APPARATUS FOR REMOVING GAS FROM A LIQUID

Michael E. Garrett, Woking, England, assignor to BOC Limited, London, England

Filed Mar. 19, 1979, Ser. No. 21,661

Int. Cl.³ F16K *24/00*

U.S. Cl. 137—171 **6 Claims**



1. An apparatus for removing gas from a liquid comprising a siphon having a rising leg and a falling leg, a skirt depending into the siphon from an upper closure member, the skirt being positioned immediately opposite the upper part of the rising leg and a gas extraction pump in flow communication with the siphon by means of a tube extending through the closure member at a location outside the skirt.

4,243,066

FLUID FLOW CONTROL VALVES

John W. Lambie, Kilmarnock, Scotland, assignor to Neptune Glenfield Limited, Ayrshire, Scotland

Filed Dec. 22, 1978, Ser. No. 972,456

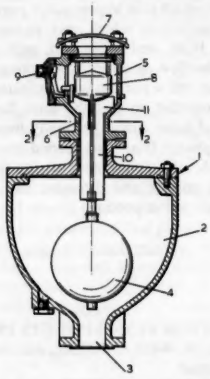
Claims priority, application United Kingdom, Dec. 30, 1977, 54263/77

Int. Cl.³ F16K *31/18*

U.S. Cl. 137—202 **5 Claims**

1. An air release valve incorporating a float chamber connectable to a pipeline and containing a float, an air chamber in communication with the float chamber by way of a passage leading from the top of the float chamber to the bottom of the air chamber, the top of the air chamber being formed with an air vent, a cup-shaped cage formed of bars located within the air chamber, a valve element contained within said cup-shaped cage in the air chamber and movable from a lowermost position above and clear of the entry of the passage into the air chamber and an upper position closing the air vent and a push rod having a cross section of multi-lobe shape located between the float and the valve element and operative to communicate

movement of the float to the valve element, the upper end of the push rod being slotted to permit the push rod to straddle



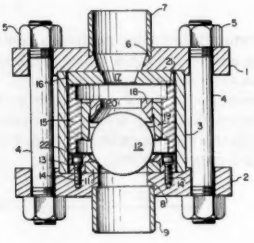
the bars of the cage and enter the cage to enable it to come into contact with the valve element within the cage.

4,243,067

BALL TYPE CHECK VALVE

Robert J. Rubey, Wisconsin Rapids, Wis., assignor to Sterling Drug Inc., New York, N.Y.

Continuation of Ser. No. 921,168, Jun. 30, 1978, abandoned.
This application Nov. 15, 1979, Ser. No. 94,732
Int. Cl.³ F16K *15/04*
U.S. Cl. 137—329.03 **12 Claims**



1. A check valve comprising:

first and second flanges spaced from each other, said first flange having an outlet opening therethrough and said second flange having an inlet opening therethrough coaxially aligned with said outlet opening;

a spherical ball between said flanges;

ball seat means concentric with and surrounding said inlet opening for receiving and seating said ball therein;

a top plate between said first flange and said ball, said top plate having a hole therethrough coaxially aligned with said openings in said flanges, said hole being of conical shape and diverging away from said ball;

ball stop means coaxially aligned with said axis through said inlet and outlet openings and spaced between said top plate and said ball and spaced from said ball seat means a distance slightly greater than the diameter of said ball for receiving said ball therein; and

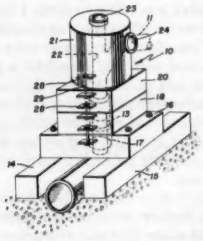
a valve body between said first and second flanges, and surrounding said ball, said top plate and said ball stop, and said ball seat means.

4,243,068

SEWER CHIMNEY

Peter J. Sugda, 30 Walnut St., Enfield, Conn. 06082, and Thomas G. Thompson, 4 Pond La., Granby, Conn. 06035

Filed Jun. 25, 1979, Ser. No. 51,616
Int. Cl.³ F16L *5/00*
U.S. Cl. 137—363 **9 Claims**



1. A sewer chimney for connecting surface branch sewer lines to a deeply buried main sewer line having an upwardly-directed nipple, comprising:

(a) a first and a second base positioned on opposite sides of the main sewer line,

(b) a bridge which rests on the first and second bases and passes over the main sewer line, the bridge having a bore through which the nipple passes, so that a portion of the nipple extends above the bridge,

(c) a transitional section which rests on and is secured to the bridge, this section having a bore which is coaxial with and encloses the end of the nipple, and

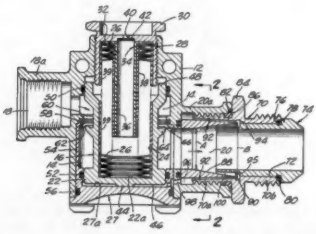
(d) a cap block which rests on and is secured to the transitional section, the cap block having a bore with a first opening coaxial with the bore of the transitional section and a second opening adapted to connect to a branch sewer line, the weight of the bridge, section, and block being supported by the bases and not by the main sewer line.

4,243,069

FLUID FLOW REGULATOR

Meyer Piet, and James J. Castor, both of City of Industry, Calif., assignors to Futurecraft Corporation, City of Industry, Calif.

Filed Jun. 22, 1979, Ser. No. 51,050
Int. Cl.³ F16K *17/34*
U.S. Cl. 137—484.6 **12 Claims**



1. A fluid flow regulator comprising:

(a) a body having an axial opening and including a fluid inlet passage and an axially spaced fluid outlet passage interconnected with said axial opening;

(b) pressure port means in said axial opening between said inlet and outlet passages;

(c) a slide member receivable in said axial opening for axial

movement therewithin in response to fluid pressure exerted thereon;

(d) biasing means operably associated with said slide member for yieldably resisting movement thereof within said axial opening;

(e) port closure means carried by said slide member for closing said pressure port means upon movement of said slide member within said opening; and

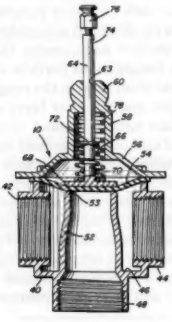
(f) fluid diverting means disposed within said outlet passage for diverting a portion of the fluid flowing therethrough and directing it toward said slide member, said fluid diverting means comprising a first conduit means defining a fluid flow path substantially parallel to the direction of flow of the fluid within said outlet passageway for capturing a portion of the fluid flowing through said outlet passageway.

4,243,070

VARIABLE BACK PRESSURE VALVE

Samuel G. Jackson, P.O. Box 16587, Lubbock, Tex. 79490

Filed Aug. 16, 1978, Ser. No. 933,989
Int. Cl.³ F16K 7/17
U.S. Cl. 137—510 **4 Claims**



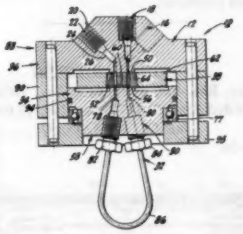
1. In a back pressure valve comprising a valve body including port means enabling fluid flow into the body, an exhaust orifice in said valve body, a diaphragm normally closing the exhaust orifice and being lifted from the exhaust orifice for discharging fluid therethrough, that improvement comprising a rod extending into the valve body and longitudinally movable with respect thereto with the inner end of the rod being operatively associated with the diaphragm and the outer end of the rod being operatively associated with an external control actuator to alter the opening and closing characteristics of the diaphragm, said diaphragm is held closed against fluid pressure in the body by a main coil spring, said rod including a ring mounted thereon for engagement with the end of the main spring remote from the diaphragm for varying the pressure exerted on the diaphragm by the spring, said valve includes a weak coil spring encircling the push rod and main coil spring engaged by the push rod with the inner end of the weak spring engaging the diaphragm to close the diaphragm in the event fluid flow ceases and pressure is removed from the diaphragm and main spring engaged with the rod by movement of the push rod outwardly thereby preventing entry of air through the exhaust orifice, the inner end of the rod extending into the main spring for maintaining the main spring and push rod in aligned relation.

4,243,071

SAMPLE INJECTION VALVE

Carl L. Shackelford, San Pablo, Calif., assignor to Altex Scientific, Inc., Berkeley, Calif.

Filed Aug. 23, 1978, Ser. No. 936,174
Int. Cl.³ F16K 11/02
U.S. Cl. 137—625.46 **11 Claims**



1. A sample injection valve especially useful for injecting a fluid sample into a pressurized fluid system comprising:

a. a first member having a first port as the fluid system inlet, a second port as the sample injection inlet, a third port as the fluid system outlet, and a fourth port as a vent;

b. means for retaining a selected amount of fluid sample;

c. control means for simultaneously connecting said first port of said first member to said third port of said first member, and connecting said fluid sample retaining means to said second port and said fourth port of said first member; said control means comprising:

a second member having first, second, third, and fourth ports, said fluid sample retaining means being connected to said second member between said second and fourth ports thereof for comm unication therewith, said second member further including shunt means for connecting said first and third ports of said second member; said second member being mounted for communication of said first, second, third, and fourth ports thereof with said first, second, third, and fourth ports of said first member; and

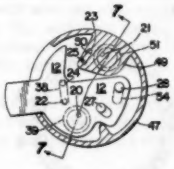
d. means for moving said second member in relation to said first member to change the position of said fluid sample retaining means from connection between said second and fourth ports of said first member to connection between said first and third ports of said first member.

4,243,072

THREE POSITION SELECTOR VALVE

Robert K. Hoffman, and Mark A. Kavanaugh, both of Plainwell, Mich., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Dec. 26, 1978, Ser. No. 972,769
Int. Cl.³ F16K 11/20
U.S. Cl. 137—637.1 **14 Claims**



1. A selector valve comprising a stationary port portion, first and second movable port portions each mounted for individual movement between two positions relative to said stationary

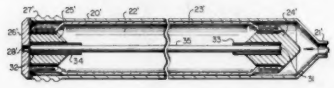
port portion, locking means locking one of said movable port portions in one of its positions when the other of said movable port portions is in one of its positions, means secured to said first movable port portion for receiving a manual force to move said first movable port portion between said two positions, and means secured to said second movable port portion and surrounding said first movable port portion for receiving a manual force to move said second movable port portion between said two positions.

4,243,073

SURGE STABILIZER

Dale G. Hugley, Box 465, Kennedale, Tex. 76060

Filed Mar. 2, 1979, Ser. No. 17,046
Int. Cl.³ F16L *55/00*
U.S. Cl. 138—26 **6 Claims**



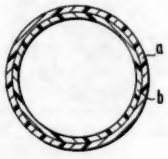
1. An improved surge stabilizer comprising:
an elongated generally cylindrical case;
means for placing the interior of said case in pressure communication with a line subject to pressure surges;
a generally cylindrical pressurizable cartridge having a longitudinal axis and having a flexible wall containing reinforcing cords positioned at an angle between about 0° and about 30° to the axis of said cartridge and further having end caps, said cartridge being positioned within said case and being attached to said case through one of said end caps; said cartridge being so proportioned with respect to said case that its flexible wall is out of contact with the inner surface of said case when it is pressurized but uncompressed; and
a control rod of selected length engagable with both of said caps disposed within said cartridge between said caps for limiting the distance said caps may displace toward each other upon receipt of a pressure surge within the case, the selected length of said control rod being such that said rod engages said end caps in displacement limiting engagement substantially simultaneously with engagement of said flexible wall with the inner surface of said case upon receipt of a pressure surge.

4,243,074

TUBULAR PACKAGING MATERIAL, PREFERABLY FOR USE AS A SAUSAGE CASING

Hans Strutzel; Klaus Hoheisel, and Siegfried Janocha, all of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 26, 1978, Ser. No. 910,144
Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724252
Int. Cl.³ F16L *11/00*; B65D *81/34*; B32B *27/06*
U.S. Cl. 138—118.1 **21 Claims**



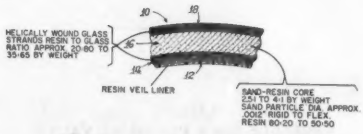
1. A multi-layer tubular packaging material having two or more layers, comprising a tubular packaging arrangement comprised of a packaging material comprising at least one first layer of a polymer comprising a linear polyamide and, bonded to the outer surface of said first layer, at least one second layer of a polymer comprising a major proportion of a linear polyamide containing from about 2 to 40 percent by weight of a hydrophilic substance compatible with the polyamide, said hydrophilic substance comprising polyvinyl alcohol.

4,243,075

COMPOSITE PIPE

Alex L. McPherson, Winfield, Ill.; Douglas E. Triestram, and James E. Lawrence, Jr., both of Coshocton, Ohio, assignors to Clow Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 879,112, Feb. 21, 1978, abandoned. This application Feb. 2, 1979, Ser. No. 8,471
Int. Cl.³ F16L *9/04*
U.S. Cl. 138—174 **5 Claims**


HELICALLY WOUND GLASS STRANDS RESIN TO GLASS RATIO APPROX. 20-80 TO 35-65 BY WEIGHT
RESIN VEIL LINER
SAND-RESIN CORE 2.5/1 TO 4/1 BY WEIGHT SAND PARTICLE DIA. APPROX. .002" RIGID TO FLEX RESIN 80-20 TO 50-50

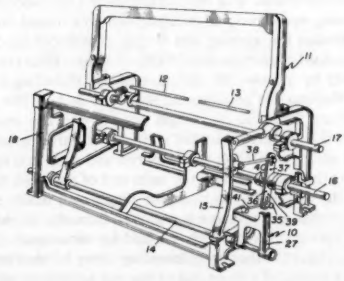
1. A composite reinforced plastic pipe which includes a tubular inner liner of resin impregnated surfacing veil and/or mat, an inner layer of continuous resin impregnated fiberglass strands wound circumferentially in a helical manner about said inner liner in contact with the outer peripheral surface of said inner liner, a core layer disposed circumferentially about said inner layer in full surface engagement therewith, said core layer consisting of a homogenous particle size sand-resin composition having a sand-resin ratio in the range of approximately 2.5:1 to 4:1 by weight, and an outer layer of continuous resin impregnated fiberglass strands wound circumferentially in a helical manner about said core layer, said inner and outer resin impregnated continuous fiberglass strands having a resin to glass ratio in the range of approximately 20:80 to 35:65 by weight, said sand-resin composition comprising a mixture of rigid resin to flexible resin in the range of approximately 80:20 to 50:50 so as to enable approximately 4–9 percent resin elongation, said inner liner, inner layer, core layer and outer layer being cured to form a composite plastic pipe having high resistance to internal and external pressures.

4,243,076

LOOM RAPIER DRIVE MECHANISM

Robert G. Mallard, 390 S. Main St., Hopedale, Mass. 01747

Division of Ser. No. 756,020, Jan. 3, 1977, Pat. No. 4,111,240. This application Jun. 8, 1978, Ser. No. 913,875
Int. Cl.³ D03D *47/18*
U.S. Cl. 139—449 **5 Claims**



1. Rapier drive mechanism for a textile loom, having a recip-

rocating lay, a lay sword rocker shaft, and having a pair of transversely-slidable rapiers capable of movement for transferring weft yard from side-to-side of the loom, comprising:

(a) a right angle transmission mounted on the loom lay with an input shaft whose axis extends transversely of the loom and with an output shaft whose axis is transverse to the axis of the input shaft, the input shaft having a pinion gear, the transmission including a geneva device that causes the output shaft to dwell,

(b) connecting means operatively connected to the output shaft and to each of the rapiers, so that rotation of the output shaft in one direction moves the rapiers toward one another and rotation of the output shaft in the other direction moves the rapiers apart, and

(c) operating means including a rocker arm that is mounted at one end on the lay sword rocker shaft for swinging movement and having a gear segment mounted at the other end for engaging and driving the pinion gear on the input shaft to bring about alternative rotation of the output shaft through a cycle that includes rotation of the output shaft in one direction to move the rapiers toward one another, rotation of the output shaft in the other direction to move the rapiers apart, and a substantial dwell after the rapiers have moved to the position at which they are furthest apart and before beginning the next cycle, the cycle taking place in the same period of time as a lay reciprocating cycle.

4,243,077

PACKAGE STRAPPING TOOLS

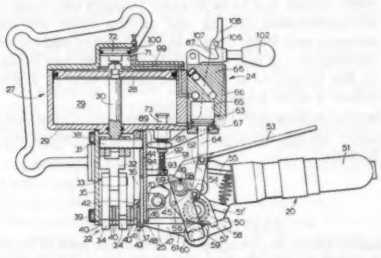
Robert D. Sansum, Harpenden, England, assignor to Gerrard Industries Limited, Kilnhurst, near Rotherham, England

Filed May 24, 1979, Ser. No. 42,243

Claims priority, application United Kingdom, May 25, 1978, 22590/78

Int. Cl.³ B21F *21/00*

U.S. Cl. 140—93.4 **15 Claims**



1. A fluid-pressure operated package strapping tool of the kind which includes tensioning means for tightening a loop of strapping around a package and jointing means for securing together overlapped portions of the loop, both the tensioning means and the jointing means being powered by pneumatic or hydraulic fluid-pressure characterised in that the tool comprises means for initiating the jointing operation of the jointing means including a time-delay device the timing cycle of which is started by the application of fluid-pressure to the tensioning means.

4,243,078

METHOD AND APPARATUS FOR MANUFACTURING FUEL RODS

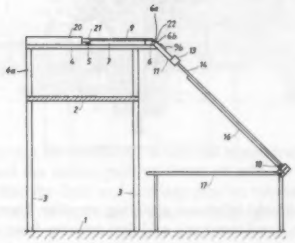
Thorbjörn Sahlin, Vesteras, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Jan. 12, 1979, Ser. No. 2,895

Claims priority, application Sweden, Jan. 24, 1978, 7800820

Int. Cl.³ B65B *1/04*

U.S. Cl. 141—1 **11 Claims**



1. A method for manufacturing nuclear fuel rods by introducing elongated fuel pellets into cladding tubes, each having an open end, said method comprising:

positioning a support means having an edge in a horizontal orientation;

arranging a plurality of said pellets in end-to-end relationship along a horizontal axis extending toward said edge on said support;

providing an elongated downwardly inclined guide means disposed with its upper end in direct contact with said edge at said axis whereby said support means and said guide means together present a break point at their junction, the downward inclination of said guide means being sufficient to cause a pellet placed longitudinally thereon to slide therealong under the influence of gravity;

positioning a cladding tube at the lower end of said guide means in longitudinal alignment therewith and in a position for receiving sliding pellets thereinto through said open end; and

displacing said pellets along said axis and over said break point whereupon each pellet will individually slide down said guide means and into the cladding tube, said displacing being accomplished at a rate such that the pellets are longitudinally spaced from one another as they slide toward and into the cladding tube.

4,243,079

APPARATUS FOR AND METHOD OF IN SITU APPLICATION OF LUBRICANT TO A WICK

Nicholas R. Daniels, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed May 16, 1979, Ser. No. 39,739

Int. Cl.³ B65B *3/04*

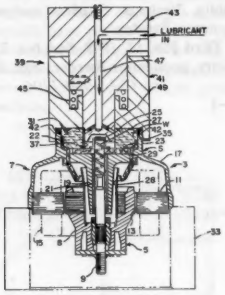
U.S. Cl. 141—1 **13 Claims**

11. The method of in situ application of a desired quantity of liquid lubricant to a wick after the wick has been installed in an electric motor or the like, said wick having a opening therethrough and being enclosed at least in part by the structure of said motor, wherein the method of this invention comprises the steps of:

bringing a first member into sealable engagement with said motor thereby to substantially enclose said wick within said first member and the structure of the motor supporting said wick;

inserting a lubricant applying member into said wick opening, said lubricant applying member being proximate to the walls of said wick defining said opening and having at least one lubricant applying orifice proximate said wick walls;

applying a desired quantity of lubricant to said wick via said orifice; and



removing said lubricant applying member from said wick opening and removing said first member from said motor.

4,243,080

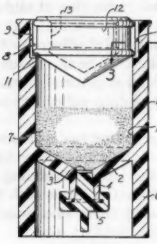
METHOD OF MIXING PLURAL COMPONENTS

Pradip V. Choksi, Northridge; Kenneth R. Michael, Canoga Park, and William H. Penny, Arcadia, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 839,831, Oct. 6, 1977, Pat. No. 4,172,457. This application Apr. 2, 1979, Ser. No. 25,705

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—2 **6 Claims**



5. A method of mixing two components of a drug or the like in a system that has a rigid tubular housing with a vacuum movable piston containing a first component and having a sealed outlet, and a hypodermic syringe with an axially slidable stopper containing a second component and having a sealed outlet, said method including the steps of:

(a) opening the outlets of the housing and syringe;

(b) coupling the outlets of the housing and syringe in flow communication;

(c) pumping the second component from the syringe into the housing for mixing with the second component within the housing, and forming a fluid coupling between the piston and stopper;

(d) reciprocating the syringe stopper in a manner that causes the piston to similarly reciprocate within the housing without a structural connection between the stopper and piston to thoroughly mix the two components;

(e) retracting the stopper within the syringe barrel to extract at least an injectable portion of the mixed components from the housing into the syringe; and

(f) disconnecting the housing from the syringe enabling the dispensing of the mixed components from the syringe.

4,243,081

AUTOMATIC APPARATUS FOR MACHINING PANELS, PLANKS AND SIMILAR ARTICLES MADE OF WOOD, WOODEN DERIVATIVES AND THE LIKE

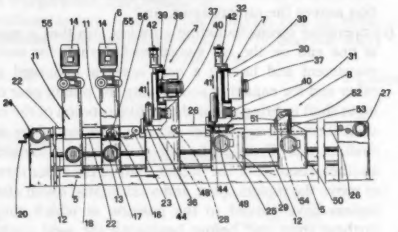
Giuseppe Pritelli, Cattolica, Italy, assignor to Pritelli, S.p.A., Morciano-di Romagna, Italy

Continuation-in-part of Ser. No. 682,404, May 3, 1976, abandoned. This application Nov. 13, 1978, Ser. No. 960,250

Claims priority, application Italy, May 13, 1975, 3410 A/75; May 27, 1975, 3432 A/75; May 27, 1975, 3433 A/75

Int. Cl.³ B27C *9/04*

U.S. Cl. 144—3 A **9 Claims**



1. An automatic apparatus for machining panels, planks and similar articles made of wood, wooden derivatives and like materials, the apparatus comprising, in combination:

means for conveying a panel along a given path in a direction parallel to its longitudinal axis;

at least one set of drilling tools positioned along a first portion of said path along which the panel to be machined is to be carried forward;

a plurality of cutter devices each including at least one respective cutter tool and positioned in spaced relation to each other along a second portion of said path downstream of said set of drilling tools with one of said cutter devices being positioned downstream of all others of said cutter devices for milling the panel along a direction transverse to said path;

at least one moveable sensing feeler device installed along a third portion of said path downstream from said cutter devices for sensing the presence of milling in a panel as it moves along said path; and

means responsive to movement of said feeler device as it senses the presence of milling in a panel for causing the panel to halt and to be in exact position necessary for the aforementioned drilling and milling tools, the distance between said feeler device and said one of said cutter tools forming part of said one of said cutter devices being equal to the length of at least one lateral side of a structure which is to be formed;

whereby milling and drilling may take place contemporaneously during the course of making the structure to be formed.

4,243,082

RAFTER SIDE SLOTTER

Alfonso A. Paris, Jr.; Douglas W. Muscanell, both of South Hill, Va., and James H. Grutter, Grand Rapids, Mich., assignors to New England Log Homes, Inc., Hamden, Conn.

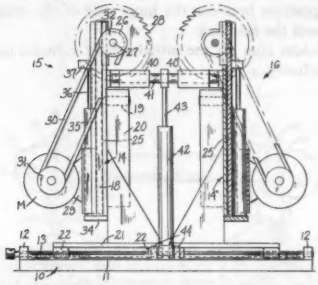
Filed Jul. 18, 1978, Ser. No. 925,773

Int. Cl.³ B27C *5/02*

U.S. Cl. 144—133 R **6 Claims**

1. A machine for side slotting a roofing rafter comprising means for supporting a rafter in a horizontal position, at least one rotary saw rotatable on an axis lying in a vertical plane parallel to the vertical plane through the center line of the rafter and spaced laterally therefrom, a motor operatively connected to the saw, a support for the saw and motor, the saw and motor support being pivotally mounted for movement

around an axis perpendicular to said vertical planes and being independently laterally displaceable, means for adjusting the angular position of said saw and motor support, means for



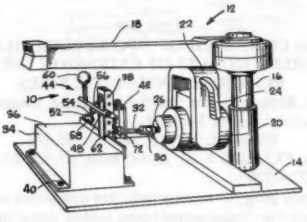
laterally displacing said saw and motor support, and means for moving the saw upward and downward along a rafter side cutting path.

4,243,083

BORING ATTACHMENT FOR RADIAL ARM SAWS

Anthony B. Serrano, 1924 Margaret St., San Jose, Calif. 95116

Filed Feb. 8, 1979, Ser. No. 10,325
Int. Cl.³ B27B 5/00; B27C 3/02
U.S. Cl. 144—35 A **2 Claims**



1. A conversion kit for modifying a radial arm saw for use as a boring tool comprising,

adapter means attachable to a saw arbor of a radial arm saw for holding a drill for rotation by said arbor, the radial arm permitting axial movement of the drill,

a workpiece engaging means for securing a workpiece in a position for drill communication with the drill, said workpiece engaging means including a workpiece support surface held by an upright platform,

an upright post attached to said platform, substantially perpendicular to said workpiece support surface, said post being provided with a longitudinal slot for passing a drill therethrough,

collar means axially affixed about said drill, and

bracket means attached to said post and having a bifurcated end portion for passage of said drill therethrough, said collar means being restrained by said bracket means when the drill is axially moved to a desired limit position.

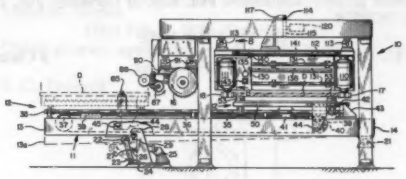
4,243,084

DOOR SIZING MACHINE

Jack M. Moody, Milwaukie, Oreg., assignor to Cranston Machinery Co., Inc., Oak Grove, Oreg.

Filed Jul. 27, 1979, Ser. No. 60,992
Int. Cl.³ B27B 5/00
U.S. Cl. 144—39 **12 Claims**

1. A door sizing machine comprising a door carriage mounted for travel on a horizontal carriage rail assembly, means for moving said carriage from a front end to a back end of said rail assembly between a pair of end trim saws to trim the ends of a door on said carriage, a planer assembly at said back end of said rail assembly, means for moving said planer assembly transversely across said rail assembly to trim the sides of



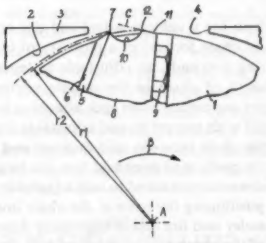
said door, means for producing a vertical separation between said saws and the return path of travel of said door on said carriage so that the door and carriage may be returned to said front end of said rail assembly without engaging said saws, and means for returning said carriage to said front end of said rail assembly with the door passing clear of the saws.

4,243,085

PLANER WITH NOISE-REDUCING MEANS

Giuseppe Gemmani, Via Marecchiese 20, Rimini, Province of Forli, Italy

Filed Jun. 12, 1978, Ser. No. 914,955
Claims priority, application Italy, Jun. 13, 1977, 12015 A/77
Int. Cl.³ B27G 13/04
U.S. Cl. 144—230 **1 Claim**



1. A planer with noise reducing means comprising a shaft rotating about a horizontal axis and defining a rotary surface, a plurality of seats longitudinally extending along said shaft and radially open outwards, a plurality of blades and blades retaining gibs accomodated in said seats, said blades having a cutting edge projecting from said rotary surface and each gib being arranged ahead of each respective blade with respect to the shaft direction of rotation, wherein according to the improvement said gibs are provided with a longitudinally extending deflecting surface which is inclined with respect to the rotary surface of the shaft so that its prolongation extends above said cutting edge for deflecting the air flow thereover, said deflecting surface having a free edge radially external to the rotary surface of the shaft and having a distance from the axis of rotation of said shaft which is smaller than that of the cutting edge.

4,243,086

CLAMP-LIKE, SHEET-METAL, SLIP-ON NUT

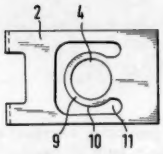
Otto Kuttler, Lorrach, and Klaus Muller, Weil-Haltingen, both of Fed. Rep. of Germany, assignors to A. Raymond, Lorrach, Fed. Rep. of Germany

Filed Jun. 26, 1979, Ser. No. 52,427

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1978, 2828078

Int. Cl.³ F16B *39/00*

U.S. Cl. 411—174 **9 Claims**



6. The nut of claim **1** wherein said aperture is formed in an asymmetrical embossment in said upper leg for threadedly receiving said screw.

4,243,087

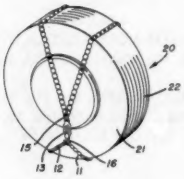
SELF-ADJUSTING TIRE CHAIN

Tony Marchionda, 708 Fifth St., Struthers, Ohio 44471

Filed Jul. 16, 1979, Ser. No. 57,984

Int. Cl.³ B60C *27/10*

U.S. Cl. 152—218 **4 Claims**



1. A tire chain for a vehicle wheel and tire consisting of a single length of chain formed of a plurality of interconnected links and having two ends, an adjustable fastener attached to said single length of chain in the middle portion thereof, a spacing member and means on its ends attaching it to said chain at points spaced with respect to said adjustable fastener so that the parts of the chain between said fastener and said spacing member may be positioned over said tire, the two ends of said chain being releaseably attached to said adjustable fastener, the arrangement positioning the parts of the chain inwardly of the ends thereof under said tire and in oppositely disposed relation to said parts of the chain positioned over said tire.

4,243,088

SKIDDER RING AND CHAIN CONNECTING MEANS

Emilien Labonville, RFD 1, Berlin, N.H. 03570

Filed Jul. 26, 1979, Ser. No. 60,980

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—223 **5 Claims**

1. Means for connecting a chain link to a skidder ring, said means comprising

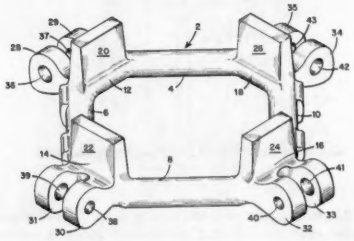
a clevis integral with and extending outwardly from said ring, said clevis comprising a pair of spaced parallel ears forming an opening therebetween substantially greater than the thickness of the chain link that is to be connected thereto,

said ears having aligned bores therein and a clevis pin in said bores within the end link of said chain,

means in one of said ears for stopping the travel of said pin through said one ear and

means for preventing removal of said pin from said ears comprising a spot of welding material applied to said pin at a position between the inner side of the other of said ears and the said link.

2. A skidder ring for use on wheels of vehicles used in the logging industry,



said ring comprising an eight sided body,

lugs on alternate sides of said ring,

clevises extending outwardly from said lugs, each clevis comprised of a pair of parallel ears with aligned bores therethrough,

the axes of said bores being in the plane of said ring,

each pair of said bores adapted to receive a clevis pin.

4,243,089

PLUGS COMPOSED OF TWO RUBBERS HAVING DIFFERENT MODULI OF EXTENSION USED FOR REPAIRING PNEUMATIC TIRES

Michael J. Kenney, Sutton Coldfield, England, assignor to Dunlop Limited, London, England

Filed Jul. 9, 1979, Ser. No. 55,778

Int. Cl.³ B32B *7/02, 25/04;* **B60C** *21/06, 25/16*

U.S. Cl. 152—370 **21 Claims**

1. A repair plug for a pneumatic tire comprises an elongate body having two components being rubber compositions having different moduli of extension, the component of higher modulus being adapted to be engaged by a repair tool so as to allow insertion of said plug singly through a hole in a pneumatic tire.

17. A repair kit for repairing a pneumatic tyre comprising a repair plug according to claim **1**, a bonding solution and a repair tool engageable with said plug to allow insertion of said plug singly through a hole in a pneumatic tire.

18. A method of repairing a hole in a pneumatic tire comprises engaging with a repair tool a repair plug having two components being rubber compositions having different moduli of extension, the engagement being with the component of higher modulus of extension and inserting said plug from externally of the tire singly through said hole and then removing said tool, the method including the step of applying a bonding solution to said repair plug.

4,243,090

BURGLAR PROOF FIRE SAFE WINDOW COVERING

Alonzo Kemp, 108 Manchester Apt. 2211, Pontiac, Mich. 48054

Filed Mar. 19, 1979, Ser. No. 21,504

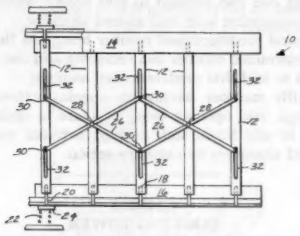
Int. Cl.³ E06B *3/92*

U.S. Cl. 160—145 **6 Claims**

1. A burglar proof fire safe window covering comprising:

a plurality of vertical bars slidingly supported at an upper and a lower end by a pair of spaced apart tracks disposed along an upper and lower inside edge of the window;

a plurality of pin engaging apertures at an upper and a lower end of the bars;



an upper and lower plurality of vertically movable pins releasably biased into engagement with the apertures; and means for releasably engaging the pins in the apertures.

4,243,091

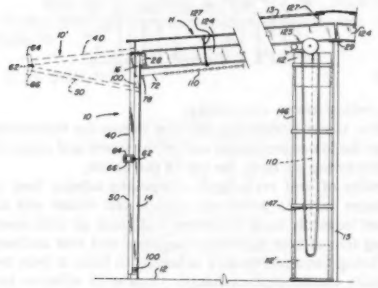
DOOR OPENING APPARATUS FOR LARGE OVERHEAD DOORS

Wilfred H. DeVore, Box 75A Star Rt., Littleton, Colo. 80120

Division of Ser. No. 749,469, Dec. 10, 1976, Pat. No. 4,177,854. This application Jul. 16, 1979, Ser. No. 57,909

Int. Cl.³ E05F *15/00*

U.S. Cl. 160—189 **2 Claims**



1. In a door opening mechanism for opening a large door in a building which includes a cable, one end of which is attached to the lower edge of a door and the opposite end of which, after leading substantially vertically upward to the overhead of the building near the top of the door and then to a convenient, out-of-the-way position, is connected to a roller chain which passes over a sprocket on a rotatable shaft joined in a bearing housing attached to the overhead of the building and then hangs downwardly with a counterweight suspended from said opposite end, said counterweight being of slightly insufficient weight to lift and open the door, and a sheave attached to said rotatable shaft with a continuous coil chain passing over and in engagement with said sheave whereby sufficient manual force can be applied to said coil chain causing the sheave and sprocket to turn thereby pulling said door upwardly into open position, comprising in combination therewith:

an electric motor with a drive sprocket mounted on its driveshaft, said motor being mounted on a frame which is pivotally attached to said bearing housing such that said drive sprocket is aligned with said roller chain and the weight of said motor urges said drive sprocket into engagement with said roller chain whereby said sprocket when turned in one direction by said motor applies sufficient additional force to said roller chain to lift and open said door, and said drive sprocket when turned in the opposite direction will draw the counterweight upwardly thereby allowing the door to descend toward the floor of the building to close.

4,243,092

CONTINUOUS CASTING

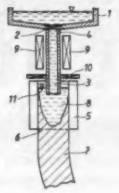
Bertil Hanas, Vesteras, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Feb. 9, 1979, Ser. No. 10,907

Claims priority, application Sweden, Feb. 10, 1978, 7801554

Int. Cl.³ B22D *27/02*

U.S. Cl. 164—49 **3 Claims**



1. A continuous casting method comprising casting molten metal through a pipe extending downwardly to the top of a continuous casting mold from above the mold's top, with the metal flowing through the pipe and into the mold and the pipe being smaller in cross-sectional area than the mold's cross-sectional area, and stirring the molten metal while flowing through the pipe, the metal forming a solidified skin containing molten metal in the mold and leaving the mold as a continuously traveling strand, said stirring being directed transversely through the flow through the pipe and restricted to the flow in the pipe above the level of the molten metal in the mold, said stirring being effected by inductively stirring the flow in the pipe in a direction that is rotative around the pipe's axis and at a high rotative velocity so that by momentum the stirring continues in the molten metal in the skin forming in the mold.

2. A continuous metal casting apparatus comprising a molten metal container having a bottom tapping hole, a casting pipe depending from said hole for conducting a flow of molten metal downwardly therefrom, a continuous casting mold spaced below said container and fed with said flow of molten metal via the bottom end of said pipe, said pipe having a smaller cross-sectional area than the mold, and means for stirring said flow while in said pipe, said stirring by said means being rotatively about the axis of said pipe and said bottom end of the pipe extending downwardly within the upper portion of said mold, said tapping hole having means for controlling the molten metal flowing therethrough and said means for stirring being an inductive stirrer on the outside of the pipe.

4,243,093

METHOD OF MAKING AN INSULATED MANIFOLD WITH DOUBLE CAST WALLS

John R. Nieman, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 17, 1977, Ser. No. 852,378

Int. Cl.³ B22D *19/16, 19/00*

U.S. Cl. 164—96 **13 Claims**

1. A method of forming a thermal insulating composite article having an inner cast metal portion, an outer cast metal portion, and an intermediate thermally insulating wall, comprising the steps of:

forming an expendable gasifiable pattern of said inner portion;

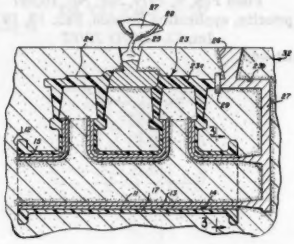
forming an expendable gasifiable pattern of said outer portion;

assembling said inner and outer portions with a nongasifiable portion defined by an insulative wall snugly received and supported therebetween to define an integral assembly

wherein the insulative wall is accurately positioned solely by the supporting patterns;

providing a mold about said assembly; and

pouring molten casting metal into said mold from opposite sides of said insulative wall to gasify said patterns in said mold and form said inner and outer cast metal portions in facial engagement respectively with the inwardly and



outwardly facing surfaces of the pattern defined by said insulative wall, said insulative wall being effectively maintained accurately in the desired intermediate disposition by the ungasified portion of both patterns and the incoming metal during the pouring operation to define an effective thermal insulation barrier between said cast metal portions of the resultant composite article.

4,243,094

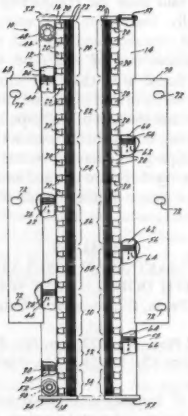
CONDENSER HEADER CONSTRUCTION

Ivan D. Woodhull, Jr., Flat Rock, and Thomas H. Liedel, Maybee, both of Mich., assignors to Karmazin Products Corporation, Wyandotte, Mich.

Division of Ser. No. 789,412, Apr. 21, 1977, Pat. No. 4,141,409. This application Jan. 11, 1979, Ser. No. 2,723

Int. Cl.³ F28B *9/08*

U.S. Cl. 165—114 **5 Claims**



1. A condenser comprising:

a plurality of substantially parallel fluid conducting members adapted to place one fluid in heat transferring relationship with another fluid so as to transform said one fluid from a gaseous state to a liquid state;

an elongated header member;

a baffle member secured within said header member defining a first and second chamber therein;

a first predetermined number of said conduit members having one end secured to said header member in fluid communication with said first chamber;

a second predetermined number of said conduit members having one end secured to said header member in fluid communication with said second chamber;

said second predetermined number being less than said first predetermined number and receiving said one fluid subsequent to said first predetermined number;

said baffle member having an opening extending therethrough, said opening being of a size to enable said one fluid in said liquid state to pass between said first and second chambers by capillary action.

4,243,095

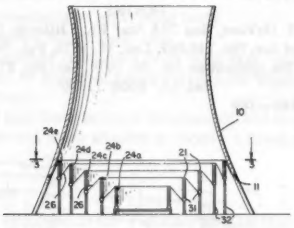
COOLING TOWER

Geerard J. Kosten, Dordrecht, Netherlands, assignor to The Lummus Company, Bloomfield, N.J.

Continuation of Ser. No. 788,610, Apr. 18, 1977, abandoned. This application Feb. 15, 1979, Ser. No. 12,328

Int. Cl.³ F28B *9/04*

U.S. Cl. 165—125 **16 Claims**



1. A cooling tower, comprising:

a hollow tower comprising air inlet means for introducing air at the lower peripheral wall of the tower and means for withdrawing air from the top of the tower;

a plurality of heat exchangers comprising tubular heat exchanger surfaces positioned within said tower and disposed inwardly from the tower wall, said air inlet means being free of heat exchanger surfaces, said heat exchangers being circumferentially arranged to form at least two radially spaced heat exchanger rings with adjacent heat exchanger surfaces thereof defining vertically disposed ring walls, said rings extending to a progressively higher elevation from the inner ring to the outer ring; and,

air directing means for directing air introduced into the tower through the heat exchangers.

4,243,096

MULTIPASS CORROSION-PROOF AIR HEATER

Adolf U. Lipets, prospekt Lenina, 150a, kv. 38; Boleslav M. Krasnov, ulitsa Pionerskaya, 18, kv. 35; Ivan A. Sotnikov, ulitsa Mashinostroitelei, 32, kv. 114, all of Podolsk Moskovskoi oblasti; Alexei Z. Fedosov, ulitsa Burakova, 7, korpus 3, kv. 18, Moscow; Vadim B. Galuskin, Juzhny proezd, 9, kv. 58, Podolsk Moskovskoi oblasti; Jury I. Lafa, ulitsa Mashinostroitelei, 28b, kv. 58, Podolsk Moskovskoi oblasti; Boris I. Alexandrov, ulitsa Udarnikov, 8, kv. 19, Podolsk Moskovskoi oblasti, and Gennady V. Gromov, ulitsa Filippova, 2, kv. 73, Podolsk Moskovskoi oblasti, all of U.S.S.R.

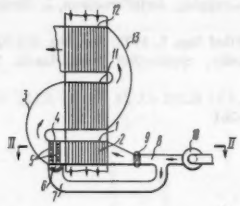
Filed Apr. 9, 1979, Ser. No. 28,394

Int. Cl.³ F28F *19/00*

U.S. Cl. 165—134 DP **4 Claims**

1. A multipass corrosionproof air heater comprising banks of heating tubes arranged in separate passes series-connected on the airside, some of said passes being located inside a corrosive zone; air circulating ducts connecting the adjacent passes to each other; cold air feeding ducts one whereof contains a

means of preheating a fraction of the cold air introduced into the first pass while the rest of said air feeding ducts are connected, by way of mixers of cold and hot air, to the circulating ducts which are located in that portion of the air heater which operates in the corrosive zone and serve to connect said portion to the rest of passes; said mixers of cold and hot air built into said air circulating ducts and consisting each of an array of parallel tubes perforated lengthwise, fitted along the front of the heating tubes forming the respective pass and connected to cold air headers communicating with the air feeding ducts.



4,243,097

WASTE HEAT BOILER

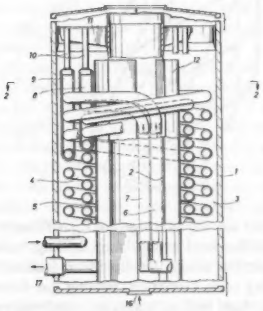
Jacobus E. Vogel, The Hague, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 717,801, Aug. 26, 1976, abandoned. This application May 3, 1978, Ser. No. 902,478

Claims priority, application United Kingdom, Aug. 27, 1975, 35350/75

Int. Cl.³ F28D 7/10

U.S. Cl. 165—163 **8 Claims**



1. Heat exchange apparatus for high temperature gases comprising an upright shell including a top and bottom closure, an upright liquid tube disposed within the shell in radially spaced relation to the shell and defining therewith a vertically elongated annular cooling space, a plurality of concentrically arranged helically wound cooling pipe sections surrounding the liquid tube and disposed in the annular cooling space for a high temperature gas, the cooling pipe sections having gas inlet means communicating therewith disposed near the bottom of the shell, means for supplying coolant disposed near the bottom of the shell, said helically wound gas cooling pipe sections at their upper ends being transformed into substantially straight pipe members disposed between the helical pipe sections and the liquid tube, which pipe members extend to and are connected near the bottom of the shell with gas outlet means, and means defining a plurality of coolant recirculation channels located, respectively, in the spaces between said helical pipe sections, said pipe members and said upright liquid tube.

4,243,098

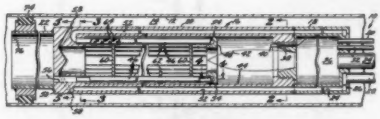
DOWNHOLE STEAM APPARATUS

Thomas Meeks, 3656 Virginia Ave., Lynwood, Calif. 90262, and Craig A. Rhoades, 9025 Wilshire Blvd. #215, Beverly Hills, Calif. 90211

Filed Nov. 14, 1979, Ser. No. 93,978

Int. Cl.³ E21B 43/24

U.S. Cl. 166—59 **10 Claims**



9. Downhole steam apparatus for location within the casing of a well borehole, said apparatus comprising:

a combustor for mixing and burning fuel and an oxidizing fluid and thereby producing heated gases;

a heat exchanger having a downward extension and including a first portion having an inlet connected to said combustor for receiving said heated gases, said first portion further having an outlet for discharging spent gases into said casing for upward passage through said casing, said heat exchanger further including a second portion having an inlet for receiving water and an outlet for discharging steam for downward passage through said extension and into said borehole, said second portion being located in heat exchange relation to said first portion for conversion of said water to steam by said heated gases, and for conversion of said heated gases to said spent gases;

conduit means connected to said combustor and to said second portion of said heat exchanger for supplying said fuel and oxidizing fluid, and said water, respectively; and

a packer carried by said downward extension between said outlets of said first and second portions of said heat exchanger and expansible against said casing to seal off the high pressure steam injection area from the lower pressure spent gas injection area whereby said oxidizing fluid can be supplied at a pressure approximating said lower pressure.

4,243,099

SELECTIVELY-CONTROLLED WELL BORE APPARATUS

Robert E. Rodgers, Jr., Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 24, 1978, Ser. No. 909,317

Int. Cl.³ E21B 47/022, 47/08

U.S. Cl. 166—65 R **36 Claims**

36. Well bore apparatus comprising:

body means adapted for passage through a well bore;

driving means including a shaft member cooperatively arranged on said body means and adapted to be selectively rotated in opposite rotational directions or to remain stationary;

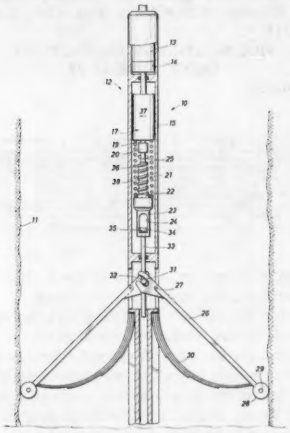
tool-positioning means including a tool-positioning member cooperatively arranged on said body means and adapted for free movement between a retracted position and an extended wall-engaging position;

coupling means cooperatively arranged on said body means between said driving means and said tool-positioning means for

releasing said tool-positioning means for its free movement in response to rotation of said shaft member in a first direction;

retracting said tool-positioning means to said retracted posi-

tion in response to rotation of said shaft member in the second other direction; and

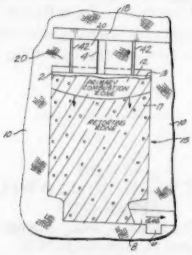


preventing said tool-positioning means from moving from its retracted position until said shaft member is rotated in said first direction.

4,243,100
OPERATION OF IN SITU OIL SHALE RETORT WITH VOID AT THE TOP

Chang Y. Cha, Bakersfield, Calif., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Filed May 4, 1979, Ser. No. 35,930
Int. Cl.[2] E21B *43/243, 43/26;* E21C *41/10*
U.S. Cl. 166—259 **31 Claims**



26. A method for retorting oil shale in an in situ oil shale retort in a subterranean formation containing oil shale, the retort having a top boundary of unfragmented formation and containing a fragmented permeable mass of formation particles wherein the upper surface of the fragmented permeable mass of formation particles is at least partly separated from the top boundary, the method comprising the steps of:

establishing a combustion zone in the fragmented permeable mass;

for a first period of time maintaining the temperature of the top boundary at less than the temperature at which unfragmented formation from above the top boundary will slough into the space between the upper surface of the fragmented permeable mass and the top boundary of unfragmented formation;

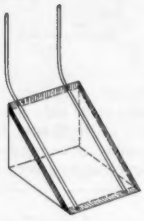
advancing the combustion zone downwardly through the retort; and

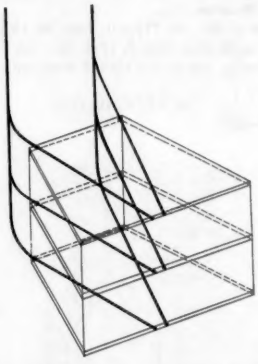
for a second period of time causing sloughing of unfragmented formation from above the top boundary into the space between the top boundary and the upper surface of the fragmented permeable mass.

4,243,101
COAL GASIFICATION METHOD

Arnold W. J. Grupping, Anjelierenlaan, 3, Aerdenhout, Netherlands

Filed Sep. 1, 1978, Ser. No. 939,031
Claims priority, application Netherlands, Sep. 16, 1977, 7710184
Int. Cl.[2] E21B *43/24, 43/26;* E21C *43/00*
U.S. Cl. 166—261 **1 Claim**





1. In a method for the underground gasification of coal or brown coal, of the kind comprising drilling boreholes in a downward direction along the dip of an inclined coal layer having overlying rock formation, passing gas downwardly in an injection borehole and withdrawing combustion gas from a production borehole, with development of a cavity in the coal layer providing communication between the boreholes, the improvement comprising:

(i) drilling boreholes in such a way that the horizontal distance between the boreholes becomes progressively smaller with their depth along the dip of the coal layer,

(ii) initiating gasification at or near to the deepest point reached by the boreholes,

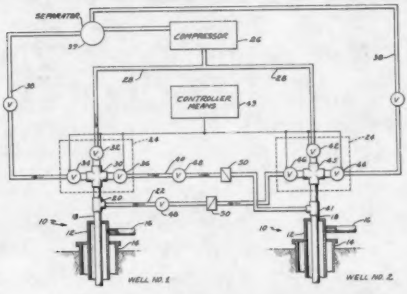
(iii) introducing filler material into the developing cavity so that the gasification front is caused to move in an upward direction along the dip of the coal layer, said filler material being of such nature and composition as to resist or prevent caving in of the overlying rock formation and any surface subsidence which might result therefrom,

(iv) after gasification of a first portion of the coal layer has been completed, plugging back said boreholes and deviating said boreholes starting from a higher point of the boreholes to reach and extend into and along the dip of another portion of the coal layer, or another coal layer.

4,243,102
METHOD AND APPARATUS FOR FLOWING FLUID FROM A PLURALITY OF INTERCONNECTED WELLS

Johnnie A. Elfarr, P.O. Box 901, Palestine, Tex. 75801

Filed Jan. 29, 1979, Ser. No. 7,365
Int. Cl.[3] E21B *43/00*; F04F *1/02*
U.S. Cl. 166—314 7 Claims



1. An apparatus for utilizing pressurized gas provided by a gas source for flowing liquid from a plurality of interconnected wells, said apparatus comprising:

an injection conduit connecting said gas source to each of said wells;

a lift control assembly for each one of said plurality of wells, said assembly interposed between a well and the injection conduit, said assembly adapted for selectively introducing pressurized gas from said gas source into the respective well and for selectively communicating exhaust gas from said connected well;

a low pressure exhaust conduit connecting each of said lift control assemblies to said gas source for selectively communicating exhaust gas having a pressure less than a predetermined amount; and

a high pressure exhaust conduit for each one of said lift control assemblies, said high pressure exhaust conduit connected between said connected well and the lift control assembly of an adjacent well, said high pressure exhaust conduit communicating exhaust gas having a pressure in excess of a predetermined amount from said connected well to said adjacent control assembly.

4. A method for utilizing pressurized lift gas provided by a gas source for flowing liquid from a plurality of interconnected wells, each one of said wells having a gas actuated pumping unit located within said wells, said method comprising the steps of:

causing pressurized lift gas to enter a first well from said gas source;

actuating a pumping unit located within said well for flowing liquid from the well into a collection conduit;

communicating lift gas having a pressure in excess of a predetermined amount from said well to an adjacent well;

injecting said lift gas having a pressure in excess of a predetermined amount into said adjacent well;

exhausting lift gas having a pressure less than a predetermined amount from said first well;

causing pressurized lift gas to enter said adjacent well from said gas source;

actuating a pumping unit located within said adjacent well for flowing liquid from said adjacent well into a collection conduit;

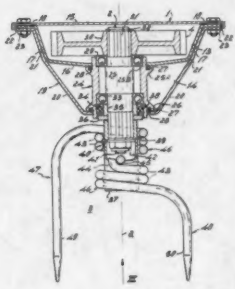
communicating lift gas having a pressure in excess of a predetermined amount from said adjacent well to one of said plurality of wells; and

exhausting lift gas having a pressure less than a predetermined amount from said adjacent well.

4,243,103
ROTARY HARROWS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Continuation of Ser. No. 597,680, Jul. 21, 1975, abandoned. This application Jan. 17, 1977, Ser. No. 759,669
Claims priority, application Netherlands, Jul. 22, 1974, 7409854
Int. Cl.[3] A01B *33/06*
U.S. Cl. 172—59 8 Claims

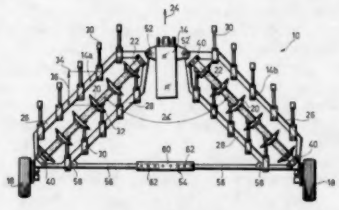


6. A soil cultivating implement or rotaty harrow comprising a frame supporting a plurality of soil working members mounted on substantially vertical shafts and rotatable about said shafts, said shafts being journalled in a portion of said frame and being positioned in a row that extends transverse to the normal direction of travel, supports being connected to the lower ends of said shafts and said supports being located below said frame portion, at least two tines fastened to said support by coils that encircle said support, said tines having respective lower, downwardly extending active portions and intermediate, substantially horizontal parts connected to said coils, the longitudinal axes of said coils substantially coinciding with the axis of rotation of the corresponding soil working member, one tine being connected to said support by an upper coil and the second tine being connected to the support by a lower coil, the lowermost ends of said tines being located at substantially the same soil working levels.

4,243,104
SOIL WORKING MACHINE

Sandor Sipos, Gödöllö; Sandor Varga, Kecskemet, and Imre Hali, Zalaegerszeg, all of Hungary, assignors to Kaposvari Mezögazdasági Gépgyárto és Szolgáltató Vállalat in Kaposvár, Kaposvár, Hungary

Filed Jun. 27, 1978, Ser. No. 919,454
Int. Cl.[3] A01B *13/08*, *35/18*
U.S. Cl. 172—148 3 Claims



3. A soil cultivating machine comprising:

a pair of frame units extending rearwardly and divergently to each other;

a respective shaft mounted on each of said frame units;

a plurality of tilling discs mounted on said respective shafts;

a respective front tool-holding bar and rear tool-holding bar on said frame units flanking said respective shaft;

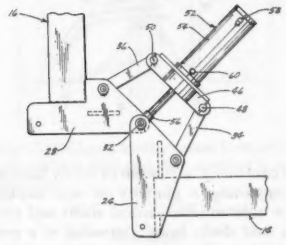
a plurality of deep-tilling implements adjustably mounted on each of said respective tool-holding bars; and

means on each of said frame units for adjusting the mutual height between each of said tilling discs and at least one of said deep-tilling implements associated with each of said tilling discs.

4,243,105
FOLDABLE AGRICULTURAL IMPLEMENT

Lambert P. Vogel, Fargo, N. Dak., and Robert J. Steffl, Moorhead, Minn., assignors to Westgo Industries, Inc., West Fargo, N. Dak.

Filed Jul. 26, 1979, Ser. No. 61,182
Int. Cl.³ A01B 73/00
U.S. Cl. 172—311 **5 Claims**



1. An agricultural implement comprising,

a tool bar having ground working tools operatively supported thereon,

said tool bar comprising a main frame and at least one wing frame pivotally connected to one of the ends thereof, said wing frame having inner and outer ends,

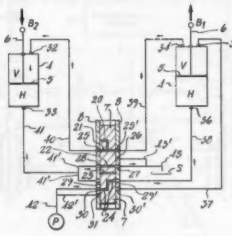
pivotal connection means interconnecting said main frame and said wing frame whereby said wing frame may be pivotally moved from a working position substantially 180 degrees to a transport position over a portion of said main frame,

said pivotal connection means comprising a first support means secured to one end of said main frame and extending upwardly therefrom, said first support means having inner and outer end portions and an upper end portion; a second support means secured to the inner end of said wing frame and extending upwardly therefrom, said second support means having inner and outer end portions and an upper end portion, the upper end portions of said first and second support means being pivotally connected about a horizontal axis which is transversely disposed to the length of said tool bar; a first linkage means pivotally connected at one end to said first support means inwardly of and below said upper end portion of said first support means; a second linkage means pivotally connected at one end to said second support means outwardly of and below said upper end portion of said second support means; a third linkage means pivotally connected to and extending between the other ends of said first and second linkage means; a power cylinder positioned above said tool bar, said power cylinder including a cylinder body mounted on said third linkage means, said power cylinder having a cylinder rod movably extending therefrom which is pivotally connected to the pivotal connection between the said upper end portions of said first and second support means whereby extension of said cylinder rod from said cylinder body will pivotally move said wing frame from its said working position to its said transport position and whereby retraction of said cylinder rod into said cylinder body will pivotally move said wing frame from its transport position to its working position.

4,243,106
DEVICE FOR SETTING BLADE OF EARTHMOVER

Otto Skubich, Hanover; Rudolf Perkert, Seelze, and Karl Heinz Fischer, Laatzen, all of Fed. Rep. of Germany, assignors to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles

Filed Jan. 12, 1979, Ser. No. 2,909
Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 2801296
Int. Cl.³ E02F 3/76
U.S. Cl. 172—804 **2 Claims**

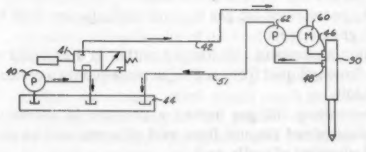


1. A device to vary the position of a tiltable blade of earth moving machines including first and second double acting hydraulically operated piston-cylinder units connected to opposite sides of the blade, the piston of each opposed unit dividing its respective cylinder into forward and rear chambers, hydraulic circuit means including control means connected with a source of pressure medium and conduits interconnecting the forward chambers of said opposed units, and additional conduits interconnecting said rear chambers of said opposed units, said control means being connected to said conduits and said additional conduits to control the flow of said pressure medium between said forward chambers of said piston-cylinder units and between their rear chambers, said control means being actuatable to one position, to enable flow of said pressure medium to said rear chamber of said first piston-cylinder unit to cause its piston, to move so that pressure medium from its forward chamber is conveyed to the corresponding forward chamber of said second piston-cylinder unit to simultaneously actuate its piston in a reverse direction, and upon movement of said control means to an alternate position, flow of said pressure medium is directed to the forward chamber of said first piston-cylinder unit to cause the piston of such first unit to move so that pressure medium from the rear chamber of said first chamber is directed to the rear chamber of the second piston-cylinder to thereby simultaneously move its piston a corresponding mount in a reverse direction.

4,243,107
HYDRAULIC HAMMER MOUNTED ON A MOVABLE BOOM

William M. Shook, New Philadelphia, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed Jan. 24, 1979, Ser. No. 6,136
Int. Cl.³ E21C 5/00
U.S. Cl. 173—43 **9 Claims**



1. A machine comprising:

a platform;

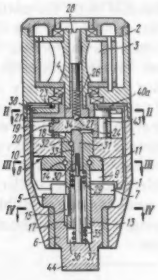
an extendable boom supported from said platform;
a hydraulic hammer supported at the movable end of said extendable boom having an inlet port for receiving operating hydraulic fluid and an outlet for venting hydraulic fluid;
a hydraulic sump disposed on said platform;
a supply pump supplying pressurized hydraulic fluid for operating said hammer;
a suppy line connecting the output of said supply pump to said hydraulic hammer;
a return line connecting to the outlet of said hydraulic hammer to the hydraulic sump; and
a back pressure reducing pump in close proximity to the hydraulic hammer at the end of said extendable boom, connected in the return line and having its suction inlet connected to the outlet of said hydraulic hammer to pump the hydraulic fluid through the return line.

4,243,108

PNEUMATIC INPACT WRENCH HAVING ROTATABLE AND AXIALLY TRANSLATABLE COMPONENTS

Anas G. Galimov, ulitsa Kuibysheva, 15, kv. 13, Sverdlovsk; Mikhail L. Gelfand, Yaroslavskoe shosse, 129, kv. 44; Boris G. Goldshtein, ulitsa Molodogvardeiskaya, 24, korpus 1, kv. 26, both of Moscow; Viktor E. Kilin, ulitsa Posadskaya, 44, korpus 2, kv. 40; Oleg Y. Sutyagin, ulitsa Dekabristov, 5, kv. 51, both of Sverdlovsk; Yakov I. Tsipenjuk, ulitsa Kirova, 5, kv. 30, Solntsevo Moskovskoi oblasti; Georgy A. Antipov, ulitsa Krasny Mayak, 3, kv. 146, Moscow, and Oleg A. Yankovsky, ulitsa Soni Morozovoi, 175a, kv. 95, Sverdlovsk, all of U.S.S.R.

Filed Nov. 3, 1978, Ser. No. 957,370
Claims priority, application U.S.S.R., Nov. 21, 1977, 2545320
Int. Cl.³ B25D *15/00*
U.S. Cl. 173—93 **2 Claims**



1. A pneumatic impact wrench comprising: a casing; a pneumatic motor having an output shaft, accommodated in said casing; an anvil journalled in said casing, connected to a spindle for a combined rotation and having impact jaws; a composite hammer accommodated in said casing and including a driving part and a driven part; said driving part of the hammer being coupled to the output shaft of said pneumatic motor; said driven part of the hammer being disposed in the driving part and connected thereto for a combined rotation and a relative axial movement and having impact jaws for engaging the impact jaws of the anvil; a diametrical slot in the driving part of said composite hammer; means for causing rotation and axial movement of the driven part of said composite hammer; a slider disposed in said diametrical slot and having its center of gravity offset relative to the axis of said composite hammer, said slider being movable from a first, initial position to a second position by rotation of said driving part; a guide roller mounted on said slider; a groove in said slider, facing said anvil; a crater in said groove; a spring-loaded ball received in said crater and mounted in the output shaft of said pneumatic motor for holding said slider in the initial position; a return spring disposed between the driven part of said composite hammer and said anvil; a stub shaft disposed in said anvil and connected thereto for a combined rotation and a relative axial movement; means for rotating and axially moving said stub shaft; a cam surface of said stub shaft for co-operating with said guide roller upon movement of said slider from its initial position; a spring-loaded locking member disposed in said stub shaft and mounted for a combined rotation together therewith and for an axial movement relative thereto; means for rotating and axially moving said spring-loaded locking member; a chamfered end of said spring-loaded locking member, received in said groove of the slider and oriented with respect to said cam surface of said stub shaft; a mechanism for returning said slider back into the initial position, which is operatively connected to the slider and to the driving part of said composite hammer.

4,243,109

BI-DIRECTIONAL ROTARY IMPACT TOOL FOR APPLYING A TORQUE FORCE

J. Edward C. Anderson, Moreland Hills, Ohio, assignor to Marquette Metal Products Company, Fountain Inn, S.C.

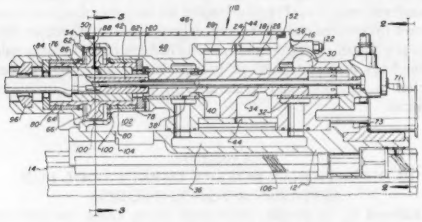
Filed Jun. 7, 1979, Ser. No. 46,477
Int. Cl.³ B25D *15/02*
U.S. Cl. 173—93.5 **21 Claims**

1. A bi-directional rotary impact mechanism comprising:
(a) an input member;
(b) an output member;
(c) an inertia member;
(d) said input, output and inertia members being all disposed about a common axis and journaled upon each other at mating, mutually telescoping circular surfaces thereof for independent angular movement about said axis;
(e) a plurality of circumferentially spaced teeth connected to said output member for conjoined angular movement with the latter;
(f) at least one pair of juxtaposed pawls carried by the inertia member for angular movement therewith and the pawls biased for engagement with the opposite sides of said teeth and capable of movement to disengage from the teeth;
(g) spring means connected to the inertia and input members to store energy upon relative angular rotative movement between the input and inertia members and during engagement of said pawls with said teeth and to release the stored energy by angularly accelerating said inertia member upon disengagement of one of said pawls from said teeth;
(h) a cam engageable with said pawls and carried by the input member and angularly adjustable relative to the input and inertia members to provide in one position of adjustment one pawl operative for impacting against a tooth of said teeth in one direction of rotation and in another adjusted position render the other pawl operative for impacting against a tooth of said teeth in the opposite direction of rotation; and
(i) said cam coacting with said pawls upon relative angular movement between the input, output and inertia members to force said pawls out of engagement with the teeth in either direction of rotation and releasing pawls so that one of the pawls, depending upon the direction of rotation and cam adjustment, impacts against a tooth of said teeth to rotatively drive the output member.

4,243,110
PNEUMATIC PERCUSSION DRILL WITH EXHAUST COOLING AND LUBRICATION OF CHUCK END

James T. Clemenson, Littleton, and Robert R. Vincent, Denver, both of Colo., assignors to Cooper Industries, Inc., Houston, Tex.

Filed Feb. 8, 1979, Ser. No. 10,438
Int. Cl.[3] B25D *15/00, 17/22*
U.S. Cl. 173—104 6 Claims

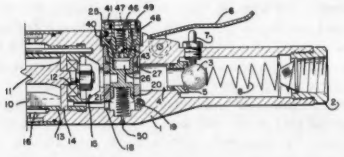


1. In a pneumatic percussion drill adapted to be connected to a source of motive air:
a housing including a cylinder bore;
a piston hammer disposed in said cylinder bore and forming opposed chambers in said cylinder bore;
exhaust ports opening into said cylinder bore for conducting exhaust air from said chambers;
a forward part of said housing including an interior chamber;
chuck means rotatably disposed in said interior chamber and drivably engaged with a drill stem shank;
inlet and exit ports opening into said interior chamber; and
means for conducting exhaust air from said exhaust ports to said interior chamber by way of said inlet ports whereby exhaust air and lubricant entrained therein may be conducted through said interior chamber to cool and lubricate said chuck means.

4,243,111
AUTOMATIC SHUT-OFF VALVE FOR POWER TOOLS

Robert A. Willoughby, and Renno W. Budziak, both of Athens, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Jan. 31, 1979, Ser. No. 7,905
Int. Cl.[3] B23B *45/04;* B27C *3/08*
U.S. Cl. 173—169 5 Claims

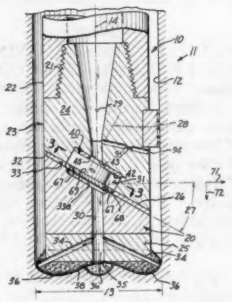


1. A fluid-driven power tool including:
a casing containing a motor, an inlet passageway for feeding motive fluid to said motor and an exhaust passageway for exhausting fluid from said motor;
a fluid-actuated valve located in said inlet passageway and movable between alternate positions including an open position allowing motive fluid to flow to said motor and a closed position preventing motive fluid from flowing to said motor;
first valve-operating means including means for establishing relatively constant pressure and means for adjustably controlling the rate of pressure rise urging said valve to its closed position;
second valve-operating means communicating with said exhaust passageway and operative, when subject to fluid pressure, to urge said valve to its open position against the force of said first valve-operating means; and
said first and second valve-operating means being arranged so that said valve will move to its closed position in response to the drop in fluid pressure in said exhaust passageway when said motor slows down.

4,243,112
VIBRATOR-ASSISTED WELL AND MINERAL EXPLORATORY DRILLING, AND DRILLING APPARATUS

Ernest R. Sartor, 1665 Braeburn Rd., Altadena, Calif. 91101

Filed Feb. 22, 1979, Ser. No. 13,919
Int. Cl.[3] E21B *10/00*
U.S. Cl. 175—55 21 Claims



1. In combination:
a rotary drill bit having an axis of rotation, a body, cutting means carried by said body for cutting a hole when rotated and vibrated around said axis of rotation;
a free-orbiting vibrator having a case rigidly connected to said bit, said case having an internal race with a central axis, said vibrator having a freely orbiting, bearingless rotor inside said case adapted to roll around said race and thereby orbit therein, on a plane of vibration thereby exerting an orbiting lateral force having at least a component directed normal to said axis of rotation, said vibrator having a fluid inlet and a fluid outlet; and
conduit means for receiving compressible motive fluid under pressure, supplying it to the vibrator, and exhausting it from said vibrator.

4,243,113
DRILLING HEAD OF A ROTARY IMPACT DRILL

Werner Kleine, Achim, Fed. Rep. of Germany, assignor to Gebruder Heller Verwaltungsgesellschaft mit beschrankter Haftung, Achim-Uphausen, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,575
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1978, 2807197
Int. Cl.[3] E21B *10/38*
U.S. Cl. 175—410 10 Claims

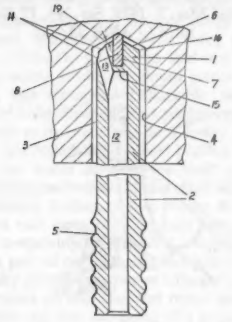
1. A drilling head for a rotary impact drill for producing drilled bores in rock comprising:
(a) a drill shaft having a cylindrical peripheral surface and an end face;
(b) a cutting member affixed in said end face, said cutting member protruding axially a predetermined axial distance beyond said end face, said cutting member having at least one cutting edge thereon;
(c) said cutting edge extending generally diametrically along said cutting member and having at least one radial outer end protruding radially beyond said peripheral surface, a radial extreme of said at least one radial outer end defining

a cutting track, said cutting track being at a radial distance from said peripheral surface;

(d) an exhaust bore in said drill shaft;

(e) a connecting bore between said exhaust bore and an opening in a surface of said drilling head;

(f) said opening having a rim extending over a portion of said end face and an adjoining portion of said peripheral sur-



face, a point of said rim of said opening having a largest radial distance from said cutting track which exceeds the distance of said radial outer end of said cutting edge from said peripheral surface; and

(g) said axial distance of said cutting edge from said end face being smaller than said largest radial distance of said point of said rim from said cutting track of said radial outer end of said cutting edge.

4,243,114

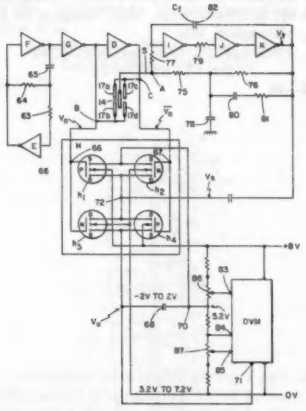
DIFFERENTIAL CAPACITOR AND CIRCUIT

Frans Brouwer, 410 Greenwood Ave., Glencoe, Ill. 60022

Filed Mar. 15, 1979, Ser. No. 21,166

Int. Cl.³ G01G *3/00*

U.S. Cl. 177—210 C **13 Claims**



1. In a differential capacitor circuit for generating an electrical signal at a variable capacitor plate proportional to the movement of the variable capacitor plate, the improvement comprising a pair of fixed spaced capacitor plates disposed in a generally parallel relationship with respect to one another with the variable capacitor plate being disposed between the fixed plates, and each of the fixed plates having double segments with each segment of a plate being electrically isolated from the other segment of the plate and with the opposite adjacent segments of both plates being connected directly together to form two segment sets to which a reference signal is applied.

4,243,115

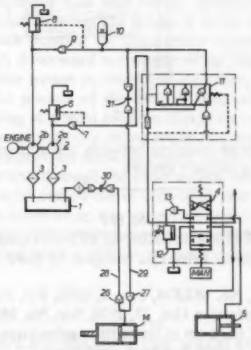
DRAW BAR UNIT

Christopher Wall, and Ronald Scaife, both of Wakefield, England, assignors to Dresser Europe S.A., Brussels, Belgium

Filed Apr. 2, 1979, Ser. No. 26,208

Int. Cl.³ B62D *5/10*; B60D *7/02*

U.S. Cl. 180—165 **6 Claims**



1. A draw bar unit for attaching a recovery vehicle to a vehicle having a pressure fluid operated steering system of the stored energy kind in cases of failure of the normal steering system pressurising means, said draw bar unit incorporating auxiliary pressurising means connectible into the pressure fluid circuit of the steering system of the disabled vehicle and operable in response to reciprocating movement of one of the vehicles towards and away from the other to pressurise said pressure fluid circuit by a pumping action.

4,243,116

FAIL-SAFE MECHANISM FOR GENERATING A PULSE INDICATING THE PRECISE MOMENT OF FIRING OF AN AIR GUN

Lloyd E. Elliott, Jr., and John L. Hudson, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 913,764, Jun. 8, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,792

Int. Cl.³ G01V *1/38, 1/14*

U.S. Cl. 181—118 **17 Claims**

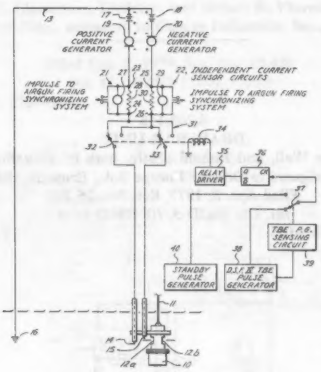
1. A mechanism for generating a plurality of pulses indicating the precise moments of firing of an air gun for a seismic record comprising,

(a) circuit means for generating a current to two closely spaced apart electrodes submerged underwater very close to an air gun means exhaust port,

(b) said circuit means including a polarity reversing circuit means connected to a sea ground as a backup electrode when any one of the two electrodes become defective, and

(c) said circuit means being responsive to said polarity reversing circuit means for periodically reversing said cur-

rent to said two electrodes after a predetermined period of time for reducing plating action on the electrodes; for



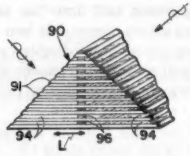
reducing cross coupling between other channels, and for providing a fail-safe system.

4,243,117

SOUND ABSORBING STRUCTURE

Glenn E. Warnaka, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Division of Ser. No. 692,834, Jun. 4, 1976, Pat. No. 4,141,433. This application Oct. 27, 1978, Ser. No. 955,543
The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.
Int. Cl.³ G10K *11/04*; E04B *1/99*
U.S. Cl. 181—286 **10 Claims**



1. A structure for absorbing sound waves comprising

a plurality of parallel wall means that are (1) fabricated of a material which is generally impermeable to a fluid in which the sound-absorbing structure is to be immersed, (2) substantially free of openings therethrough, (3) generally lacking in sound absorbing capability, (4) acoustically reflective, and (5) laterally spaced a distance not more than one wavelength of a predetermined highest frequency to be absorbed, said wall means forming an array of side-by-side elongate fluid filled cavities each having an open end and a closed end, said open ends of said cavities receiving said sound waves, each of said cavities (1) having an uninterrupted dimension along said wall means greater than twice the spacing between and coextensive with said wall means, (2) having a length from said open end to said closed end at least equal to one-fourth of the wavelength of the predetermined highest frequency to be absorbed, and (3) having a uniform cross section substantially throughout the length thereof, and

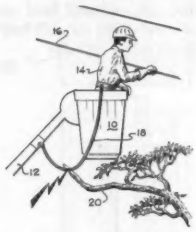
acoustically reflective barrier means forming the closed ends of said cavities, said barrier means reflecting said sound waves received within said cavities through said open ends in a direction opposite to the direction of propagation of said sound waves, the sound-absorbing structure being free of any material adjacent to and extending over the sound-receiving end of said array of cavities, said cavities being uninterrupted between their sound-receiving ends and said barrier means.

4,243,118

NON-CONDUCTIVE SAFETY LINE AND METHOD

Milton E. Landry, 601 Sadie Ave., Metairie, La. 70003

Filed Mar. 5, 1979, Ser. No. 17,286
Int. Cl.³ A62B *35/00*
U.S. Cl. 182—3 **12 Claims**



9. A non-conductive safety line, comprising:

(a) an elongated rope core having a pair of ends;

(b) end loop splices formed on the rope core ends;

(c) an exterior tubing positioned over the rope core and having a pair of ends;

(d) a filler contained within the exterior tubing and completely capsulating the rope core;

(e) a pair of shrinkable tubing sections positioned over the end loop splices and over the ends of the exterior tubing; and

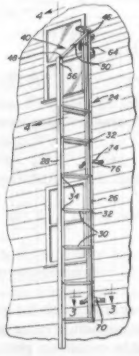
(f) a film on the exterior of the safety line, preventing surface wetting.

4,243,119

FOLDING BUILDING SIDE MOUNTED FIRE LADDER

Eugene Rossey, Sr., Milwaukee, Wis., assignor to Ladder of Life, Inc., Milwaukee, Wis.

Filed Apr. 27, 1979, Ser. No. 34,141
Int. Cl.³ E06C *9/12*
U.S. Cl. 182—96 **4 Claims**



1. A foldable ladder for ascending and descending to and from an elevated level, said ladder including a pair of upstanding elongated channel-shaped side rails opening laterally outwardly toward each other and a plurality of vertically spaced horizontal elongated rungs extending between and pivotally

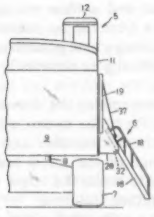
attached at their opposite ends to and within the corresponding side rails and with said side rails and rungs defining a foldable parallelogram construction, a plurality of laterally outstanding anchor brackets carried by and spaced along one of said side rails for anchoring said one side rail in upright horizontally spaced position relative to a suitable upstanding support structure, said ladder being foldable between a first closed position with said side rails closely adjacent each other and said rungs generally paralleling said side rails and a second open position with said side rails spaced apart and said rungs generally horizontally disposed, the other side rail being swingable outwardly and downwardly relative to said one side rail upon folding of said ladder from said closed position toward said open position, and elongated collapsible inclined bracing means connected at its upper end to a predetermined portion of said one side rail at its lower end to a lower portion of said other side rail, said collapsible inclined bracing means defining a tension member brace defining the limit of outward and downward swinging movement of said other side rail from said one side rail during folding of said ladder from said closed position toward said open position, said collapsible inclined bracing means comprising an elongated articulated brace member including a pair of opposite end elongated brace member sections pivotally joined together at adjacent ends and to the upper end portions of said one and other side rails at their remote ends, said one side rail being of a greater inside transverse dimension than the outside transverse dimension of said other side rail and laterally receiving said other side rail, said bracing means and said rungs therein when said ladder is folded, the upper end of said one side rail projecting upwardly above the other side rail when said ladder is folded and including a downwardly opening laterally outwardly projecting inverted channel-shaped cover which overlies the upper ends of said one and other side rails when said ladder is folded, said anchor brackets including horizontally disposed V-shaped upper and lower brackets opening horizontally away from the side of said one side rail remote from the other side rail, the upper bracket being disposed in a vertical plane and the lower bracket being disposed in a horizontal plane.

4,243,120

RETRACTABLE BOARDING LADDER

Dexter Pratt, Jr., Waukesha, and John F. Holz, Milwaukee, both of Wis., assignors to Harnischfeger Corporation, W. Milwaukee, Wis.

Filed Jun. 28, 1979, Ser. No. 52,800
Int. Cl.[2] E06C *1/397, 5/04*
U.S. Cl. 182—98 **8 Claims**



1. The combination of a ladder having a pair of elongated substantially parallel stringers that extend between its top and bottom ends and a plurality of transversely extending treads connected between the stringers at lengthwise spaced intervals along them, and means whereby said ladder is connected with relatively fixed structure that is in front of it and is guided and controlled for motion between a raised inoperative position and a lowered operative position, said combination being characterized by:

A. rail means on said fixed structure cooperating with rail-guided means on the top of the ladder for constraining the top of the ladder to move along a defined path that has upper and lower ends and is straight and substantially vertical along a substantially major portion of its length from its upper end;

B. guiding means on said fixed structure cooperating with said stringers to impart to the bottom of the ladder a rearward motion component during downward movement of the ladder and a forward component during its upward movement, so that in the operative position of the ladder the stringers are upwardly and forwardly inclined but in its raised position they are more nearly vertical;

C. counterweight means guided for upward and downward motion along a fixed path;

D. cable means attached at one end to said counterweight means;

E. securement means connecting the other end of said cable means to the ladder at a location thereon which is spaced below its upper end and which therefore has a most forwrd position when the ladder is in its raised position, from which position the securement means moves rearward with downward movement of the ladder; and

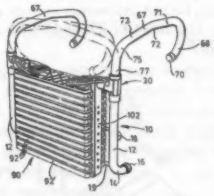
F. cable guide means on said fixed structure, engaged with the medial portion of the cable means, said cable guide means being at a fixed location that is above and forward of said most forward position of the securement means, so that forces imposed upon the ladder by the counterweight means, acting through the cable means, are such that the ladder can be moved out of each of its said positions with relatively small force, can be carried by momentum to the position towards which it is started, and decelerates during the final portion of its movement to each of said positions.

4,243,121

WEB LADDER RELEASE MECHANISM

Alexander S. Kiss, P.O. Box 209, Queenston, Niagara-on-the-Lake, Ontario, Canada, and Frank B. Leslie, 8883 Niagara River Pkwy., Niagara Falls, Ontario, Canada (L2E 6S6)

Filed Oct. 15, 1979, Ser. No. 85,000
Claims priority, application Canada, Sep. 11, 1979, 335418
Int. Cl.[3] E06C *1/56*
U.S. Cl. 182—196 **7 Claims**



1. In combination:

frame means adapted for attachment adjacent an opening in a building,

the frame means defining two spaced-apart, substantially horizontal passages,

a catch element mounted for reciprocation within each passage,

resilient means urging each catch element in one direction with respect to its passage,

manual means for urging each catch element against its respective resilient means,

and a collapsible ladder having attachment means by which a top end of the ladder may be anchored, the ladder also having containment means with reception means for receiving said catch elements when the latter are shifted in said one direction, whereby the containment means are retained with respect to the frame means, the containment means when so retained being adapted to maintain the ladder in collapsed condition.

4,243,122

LADDERS LEVELING DEVICE

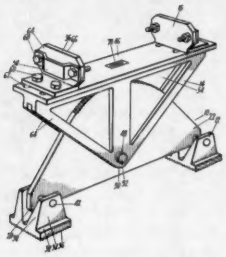
Ian B. Coutts, 20 Kildare St., Burwood, Victoria, Australia (3125)

Continuation-in-part of Ser. No. 819,174, Jul. 26, 1977. This application Dec. 19, 1978, Ser. No. 970,967

Claims priority, application Australia, Jan. 6, 1977, PD0304

Int. Cl.³ E06C *7/44*

U.S. Cl. 182—200 **15 Claims**



1. A base device for attachment to a ladder comprising a base; ground engaging means depending from said base and being adapted to engage various types of surfaces; a top pivotally mounted to said base, said top being approximately triangular in shape and comprising two identical portions enveloping said base, and a plate attached to the topmost edge of each of said two identical portions; ladder receiving means on said top for releasably and securably receiving a pair of spaced apart rails of said ladder therein; and adjustment means for holding said top in a selected position relative to said base.

4,243,123

DEVICE FOR PREVENTING RATTLING OF PADS IN DISC BRAKES

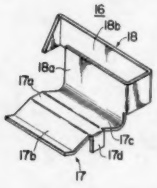
Mamoru Watanabe, Tokyo, JPX, assignor to Watanabe Engineering Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1979, Ser. No. 29,149

Claims priority, application Japan, Sep. 29, 1978, 53-133937[U]

Int. Cl.³ F16D *65/00*

U.S. Cl. 188—73.5 **4 Claims**



1. In a disc brake including a caliper body arranged to stride over a disc and having a friction pad receiving portion, and a pair of friction pads for applying pressure to the disc from its both sides to exercise a braking effect thereon, said friction pad receiving portion having an opening defining top, bottom, and side inner surfaces, a device for preventing a friction pad from rattling, said device comprising a flat elongated pad bottom supporting surface, a flat elongated pad side guiding surface, a resilient portion extending downwardly from each side of said supporting surface and then upwardly, the upwardly extending part of one of said resilient portions merging into said guiding surface, and a mounting portion cooperating with said guiding surface to mount said device on said caliper body in a lower corner of said pad receiving portion with said resilient portions engaging said bottom surface, said device being mounted such that the lower edge of one of said pads, adjacent one lower corner thereof, rests on said supporting surface, and the side edge adjacent said lower corner bears against said guiding surface, whereby said pad slides along said supporting and guiding surfaces when said brakes are activated or deactivated and said resilient portions engagement with said bottom surface bias said pad into engagement with said top surface to prevent rattling.

4,243,124

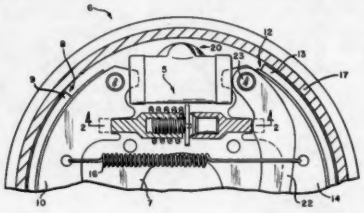
AUTOMATIC NON-SERVO BRAKE ADJUSTER

Michael A. Kluger, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Dec. 26, 1978, Ser. No. 973,468

Int. Cl.² F16D *65/56*

U.S. Cl. 188—79.5 P **2 Claims**



1. In a drum brake having a backing plate, a pair of brake shoes with friction linings and carried by the backing plate, a return spring for biasing the brake shoes toward each other, service brake actuator means for urging the brake shoes to a braking position, and a parking lever pivotally attached to one of the brake shoes for urging the brake shoes to a braking position, an adjustable strut for maintaining a controlled clearance between the linings and the drum, the strut comprising:

a nut member with an internally threaded portion and a bifurcated end portion for receiving one of the brake shoes;

a screw member with an externally threaded portion received by the threaded portion of the nut member, a projecting portion extending axially away from the threaded portion and a radially extending flange portion disposed between the threaded and projecting portions, the projecting portion comprising a cylindrical stem with a uniform diameter and with a unitary planer end face facing axially away from the nut member, the projecting portion also comprising a base portion adjacent the flange, the base portion defining an outwardly facing frustoconical clutch surface;

a torsion spring circumscribing the threaded portions of the nut and screw members, the torsion spring having a first end anchored to the nut member and a second end anchored to the flange of the screw member, the torsion spring being biased to rotate the screw member out of the nut member to lengthen the strut;

a pivot member with a bifurcated end portion for receiving the parking lever and the other brake shoe, and having a blind axial bore with a uniform diameter for receiving the stem of the screw member, the bore terminating in a unitary planer axially facing bottom face parallel to the stem end face, the bottom face and the end face of the stem cooperating to define a space therebetween, the pivot member also comprising an inwardly facing frustoconical clutch surface engageable with the screw member clutch surface; and

a resilient member comprising a Belleville washer disposed within the space between the bore bottom face and the stem end face, engageable with the bottom and end faces

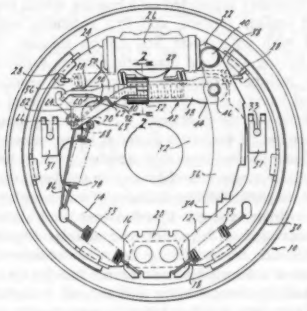
and biased to resist rotation of the screw member out of the nut member, the clutch surfaces engaging each other to prevent rotation of the screw member upon full compression of the Belleville washer between the end and bottom faces under the influence of the return spring when the brakes are released, the clutch surfaces also engaging upon full compression of the Belleville washer between the bottom and end faces to prevent rotation of the screw member into the nut member as the strut is compressed by the parking lever during a parking brake application so that the strut functions as a rigid parking brake strut, the clutch surfaces disengaging and the bottom and end faces separating to permit expansion of the Belleville washer and rotation of the screw member out of the nut member to lengthen the strut upon lining wear during a service brake application, the rotation of the screw member out of the nut member tending to compress the Belleville washer until the Belleville washer balances the torsion spring.

4,243,125

SELF-ADJUSTING DRUM BRAKE

Robert Spaargaren, Southfield, and Albert DiMatteo, Metamora, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Sep. 21, 1979, Ser. No. 77,830
Int. Cl.³ F16D *65/40*
U.S. Cl. 188—79.5 P **2 Claims**



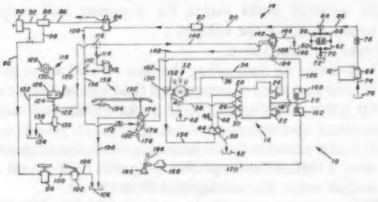
1. A one-piece adjusting lever and mounting member for an internal shoe drum brake system which includes a pair of webbed brake shoes mounted in a conventional manner with a first pair of end portions supported for pivotal movement, one of the brake shoes having an aperture through the web, an axially extendable and contractable strut assembly between a pair of shoe second end portions with a rotatable member as part of the strut assembly so as to produce extension and contraction thereof, the one-piece adjusting lever and mounting member comprising: a sheet metal member having a first arm portion extending so that a free end thereof engages an end of the strut assembly to produce pivotal movements of the adjusting lever in response to relative movement between the strut assembly and the brake shoes; a second arm of the adjusting lever extending substantially normal to the first arm and through the aperture in the brake shoe web to provide a mounting fulcrum to pivot the adjusting lever in response to the actuating force on the first arm by the strut assembly, a third arm extending from the second arm in substantial parallelism with the web of the one brake shoe and on an opposite side thereof than the first arm; the adjusting lever further including a pawl arm for engaging the rotatable portion of the strut assembly at its free end so that pivotal movements of the adjusting lever about the point of engagement between the brake web and second arm produce circumferentially oriented movements of the pawl arm's free end relative to the struts rotatable member; means between the free end of the pawl arm and the rotatable member promoting mutual movement therebetween in one direction thus effecting rotation and resultant extension of the strut assembly and restraining mutual movement and rotation of the strut member so as to effect contraction thereof; biasing means on the adjusting lever including a first yieldable member between the third arm and the brake shoe for exerting a force between the movement promoting means as permitted by the interaction between the first arm and the strut assembly, a second yieldable member between the brake shoe and the pawl arm exerting a lateral force on and relative to the pawl arm to maintain engagement with the strut's rotatable member.

4,243,126

BRAKE SYSTEM FOR A VEHICLE AND METHOD OF OPERATION THEREOF

Arthur L. Lee, and Arthur B. Coval, both of Columbus, Ohio, assignors to A. L. Lee Corporation, Columbus, Ohio

Division of Ser. No. 702,396, Jul. 6, 1976, Pat. No. 4,113,076.
This application Apr. 10, 1978, Ser. No. 895,150
Int. Cl.³ B60K *41/20*
U.S. Cl. 192—2 **9 Claims**

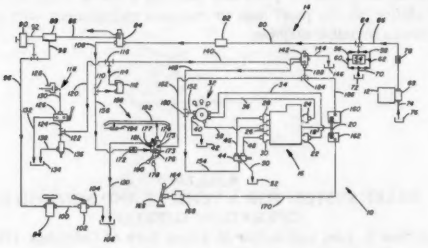


1. A brake actuator for a vehicle comprising,
propelling means for said vehicle,
electric traction motors connected to said propelling means,
an electric circuit to supply current to said electric traction motors,
fluid pressure operated switch means to open and close said circuit, said fluid pressure operated switch means arranged when subjected to fluid under pressure to close said circuit and energize said electric traction motors,
fluid actuated brake means for engaging said propelling means and braking said vehicle,
a source of fluid under pressure,
a brake actuator valve,
a fluid circuit for controlling the flow of fluid under pressure between said source of fluid under pressure to said brake actuator valve, said fluid actuated braking means and said fluid pressure operated switch means,
said brake actuator valve arranged in a brake disengaged position to supply said fluid actuated brake means with fluid under pressure from said source and maintain said fluid actuated brake means in a brake disengaged position,
said brake actuator valve arranged in a brake engaged position to vent said fluid under pressure from said fluid actuated brake means and vent said fluid under pressure from said fluid pressure operated switch means so that upon engagement of said fluid actuated brake means said fluid pressure operated switch means opens said circuit and deenergizes said traction motors, and
brake reset means connected to said brake actuator valve for maintaining said brake in an engaged position after actuation of said brake actuator valve.

4,243,127
CONTROL SYSTEM FOR AUTOMATICALLY ACTUATING VEHICLE BRAKES

Arthur L. Lee, and Arthur B. Coval, both of Columbus, Ohio, assignors to A. L. Lee Corporation, Columbus, Ohio

Continuation-in-part of Ser. No. 702,396, Jul. 6, 1976, Pat. No. 4,113,076. This application Sep. 11, 1978, Ser. No. 941,201
Int. Cl.³ B60K *41/20*
U.S. Cl. 192—4 A **7 Claims**



1. A control system for automatically actuating a vehicle brake comprising,

propelling means for the vehicle,

fluid pressure operated control means for controlling the transmission of power to said propelling means,

fluid actuated brake means for engaging said propelling means to brake the vehicle,

a brake actuator valve,

a fluid circuit for controlling the flow of fluid under pressure between a source of pressurized fluid and said brake actuator valve, said fluid actuated brake means, and said fluid pressure operated control means,

said brake actuator valve having a valve housing with an inlet, a first outlet for pressurizing said fluid circuit, and a second outlet for venting said fluid circuit,

a valve member movable in said valve housing between a brake disengaged position connecting said inlet with said first outlet for pressurizing said fluid circuit and a brake engaged position connecting said first outlet with said second outlet for venting said fluid circuit,

said brake actuator valve being normally positioned in said brake disengaged position to supply said fluid actuated brake means and said fluid pressure operated control means with fluid under pressure to maintain said fluid circuit pressurized and said fluid actuated brake means in a disengaged position with respect to said propelling means and to supply drive to said propelling means,

said brake actuator valve being movable upon actuation to said brake engaged position to direct said fluid under pressure from said first outlet to said second outlet to vent said fluid circuit so that said fluid actuated brake means engages said propelling means to brake the vehicle and interrupt drive to said propelling means,

a safety brake valve having a valve member connected to said brake actuator valve, said safety brake member being positioned in said fluid circuit and subjected to the fluid pressure applied to said fluid actuated brake means and said pressure operated control means,

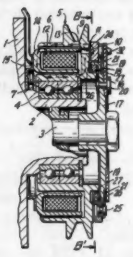
said safety brake valve member being operable to maintain said brake actuator valve positioned in a brake disengaged position when said fluid pressure supplied to said fluid pressure operated control means in said fluid circuit exceeds a preselected pressure, and

said safety brake valve member being actuated when said fluid pressure applied to said fluid pressure operated control means in said fluid circuit decreases to said preselected pressure to move said brake actuator valve to a brake engaged position to stop the vehicle and prevent restarting of the vehicle until said fluid pressure in said fluid circuit is increased above said preselected pressure.

4,243,128
ELECTROMAGNETIC CLUTCHES

Isamu Shirai, Isesaki, Japan, assignor to Sankyo Electronic Company Limited, Isesaki, Japan

Filed Mar. 28, 1978, Ser. No. 890,982
Claims priority, application Japan, Mar. 30, 1977, 52/36601
Int. Cl.³ F16D *27/10*
U.S. Cl. 192—35 **7 Claims**



1. In an electromagnetic clutch comprising a first rotatable member rotatably supported on a bearing means and having an axial end surface thereof, said first rotatable member being provided with an annular first clutch element of magnetic material having axial end magnetic friction surfaces, a second rotatable member rotatably supported on another bearing means and having a flange which faces said axial end surface with an axial gap therebetween, a cooperating annular second clutch element of magnetic material being supported on said flange of said second rotatable member so as to be capable of limited axial movement and having an axial end surface which faces said magnetic friction surfaces of said annular first clutch element with an axial gap therebetween, and electromagnetic means associated with one of said annular first and second clutch elements for attracting the other clutch element, the improvement comprising said second annular clutch element being relatively rotatable on said second rotatable member, said first rotatable member being provided with an axial projection on said axial end surface thereof to define an annular surface with a smaller diameter than said first annular clutch element, said flange being provided with an axial annular projection on the axial end surface thereof which faces said axial projection of said first rotatable member, said annular projection having a greater inner diameter than the diameter of the annular surface defined by said axial projection of said first rotatable member and being partially cut away, said second clutch element being partially cut away at the radial inner edge thereof, at least one C-shaped spring member having a greater inner diameter than said annular surface of said projection and having radially outwardly extending projections at opposite ends thereof, said C-shaped spring being disposed within an annular space between said annular axial projection of said flange and said axial projection of said first rotatable member with said radially outwardly extending projections being disposed in said cut away portion of said annular axial projection and said cut away portion of said second clutch element so that one of said projections of said arcuate spring member engages with said second clutch element, with the other projection engaging with said flange when second clutch element is rotated, whereby the transmission of the rotational force from said first rotatable member to said second rotatable member may be secured by a frictional contact between said annular surface of said projection and the inner surface of said C-shaped spring member established by the rotation of said second clutch element together with said first clutch element

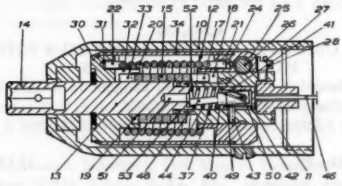
attracted thereto, in addition to the frictional contact between said first and second clutch elements.

4,243,129

DEVICE FOR TIGHTENING A SCREW JOINT

Knut C. Schoeps, Tyresö, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Mar. 15, 1978, Ser. No. 886,651
Claims priority, application Sweden, Mar. 22, 1977, 7703254
Int. Cl.³ F16D *43/21, 13/08*
U.S. Cl. 192—56 C **7 Claims**



1. A device for tightening screw joints, comprising:
a motor;
a torque responsive slip clutch coupled to said motor;
an output shaft coupled to said slip clutch;
said slip clutch including a driving clutch member, a driven clutch member, one of said clutch members having a friction surface, a coil-type friction spring having respective ends, said coil type friction spring being torsionally wound and pretensioned in itself relative to said friction surface and having one of its ends positively coupled to the other of said clutch members, said coil-type friction spring due to said torsional pretensioning engaging said friction surface by a radially acting friction grip, and an auxiliary torsion spring having its ends positively coupled to the ends of said coil-type friction spring and being arranged to apply a torque load in either direction on said coil-type friction spring to selectively boost or counteract the pretension of said coil-type friction spring; and
an adjusting means for continuously varying the relative angular positions between one of the ends of said coil-type friction spring and the corresponding end of said auxiliary torsion spring, for varying said torque load on said coil-type friction spring, thereby enabling said auxiliary torsion spring to selectively exert on said coil-type friction spring a friction grip boosting or reducing torsional load of the slip clutch.

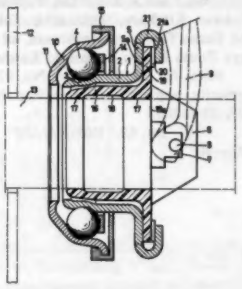
4,243,130

SELF-CENTERING CLUTCH RELEASE BEARING COMPRISING GUIDE MEANS

Rene Vinel, Bourg la Reine; Jean-Pierre Querton, Maisons Alfort, and Claude Serville, Clamart, all of France, assignors to SKF Compagnie d'Applications Mecaniques, Clamart, France

Filed May 10, 1978, Ser. No. 904,707
Claims priority, application France, May 16, 1977, 77 14977
Int. Cl.³ F16D *23/14*
U.S. Cl. 192—98 **9 Claims**

1. A self-centering clutch release bearing assembly comprising an antifriction bearing having a plurality of bearing elements located between an inner ring and an outer ring, said inner ring having a radial extension, an axially slidable supporting element supporting said bearing, said supporting element having an internal guiding surface for contacting a guide tube, said supporting element including a radial flange having one face with a radial surface portion which bears against said radial extension of said inner ring of said bearing, said radial flange having integral elastic means which project from another face which lies opposite to said one face, said radial extension of the inner ring including projecting portions which engage said elastic means to bias said radial extension of the inner ring against said one face of said radial flange, said bearing being movable radially to a centered position after a declutching operation.

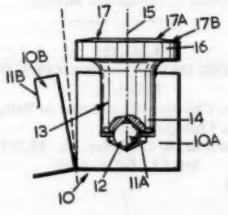


4,243,131

CONVEYING APPARATUS

Andrew Young, Coatbridge, Scotland, assignor to Lamberton & Company Limited, Lanarkshire, Scotland

Filed Oct. 26, 1979, Ser. No. 89,279
Int. Cl.³ B65G *13/12*
U.S. Cl. 193—35 MD **7 Claims**



1. Apparatus having a conveying surface for supporting and conveying articles between work stations, comprising
a support on which a plurality of elements are individually rotatably mounted, the elements being arranged in two adjacent rows in each of which the elements are equally spaced apart, the elements of one row being staggered with respect to the elements of the other row, each element being mounted for rotation about an axis which is inclined at a small angle to the normal to the conveying surface and having a surface portion which is radially spaced from said axis different parts of which surface portion become tangential to said conveying surface according to the rotational position of the element, the inclination of the axes of the elements of said one row with respect to said normal being of opposite sense to the inclination of the axes of the elements of said other row, and the spacing between adjacent elements being such that a substantially continuous conveying surface is formed by the tangential surface-portion parts of adjacent elements.

4,243,132
SPEED CONTROLLER FOR THE ROLLING CYLINDRICAL ARTICLES

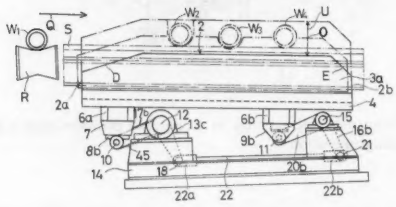
Isamu Miyakoshi, Osaka; Kenji Ito, Fujiidera; Hideo Azuma, Otsu; Fukuzo Kitakaze, Takatsuki; Takamichi Tomotaki, Kobe, and Yasuo Takehara, Kashiwara, all of Japan, assignors to Hankyu Zouki Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jul. 31, 1978, Ser. No. 929,230

Claims priority, application Japan, Sep. 6, 1977, 52-107621; Oct. 4, 1977, 52-134032

Int. Cl.[2] B65G *11/20*

U.S. Cl. 193—40 **9 Claims**



1. A speed controlling apparatus for cylindrical articles which are to roll on inclined skid rails from an inlet to an outlet thereof, the apparatus comprising: a control rail, located substantially in parallel to said skid rails and near thereto, said control rail including at least one base plate and thick layer of a soft resilient substance attached to an upper surface of said base plate; a supporting construction composed of a front L-shaped arm having an upper end, an elbow-shaped portion and a lower end located near to said inlet, a rear L-shaped arm having an upper end, an elbow shaped portion and a lower end located near to said outlet, each said arms being rotatably attached at respective said upper ends to a lower surface of said base plate of said control rail and being rotatably supported by a frame base at respective said elbow-shaped portions, said L-shaped arms being linked to one another at said lower ends by a connecting rod; and means for giving to said control rail a substantially vertical reciprocative motion.

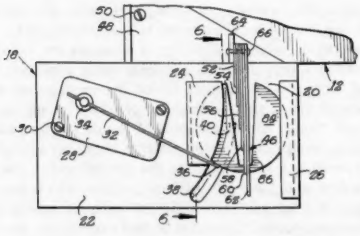
4,243,133
ANTI-STRINGING DEVICE FOR A COIN DETECTING DEVICE

Frank G. Nicolaus, Chicago, Ill., assignor to Bally Manufacturing Corporation, Chicago, Ill.

Filed Mar. 8, 1979, Ser. No. 18,751

Int. Cl.[3] G07F *1/04*

U.S. Cl. 194—9 R **12 Claims**



1. A coin detecting device comprising: a coin chute defining a path down which a coin travels; a switch having first and second electrical states; actuating means connected to the switch for changing the electrical state of the switch, the actuating means changing the switch to the first electrical state when a coin traveling down the path passes a predetermined first position along the path, and changing the switch to the second electrical state when either a coin traveling down the path passes a predetermined distance past the first position or a coin which had past the first position is pulled up the path past a predetermined second position along the path; and gating means comprising a plurality of independently movable coin passing gates situated along the path for preventing a coin with a slotted body from being drawn up the path far enough to allow the switch to change to the second electrical state after it had passed the first position along the path and had forced the switch into its first electrical state, thus protecting against multiple actuation of the switch by one coin.

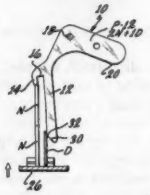
4,243,134
COIN OPERATED VENDING APPARATUS WITH MULTIPLE COIN CHUTES

Jack S. Chalabian, Gardena, Calif., assignor to K-Jack Engineering Company, Inc., Gardena, Calif.

Filed Feb. 22, 1979, Ser. No. 13,822

Int. Cl.[3] G07F *5/08*

U.S. Cl. 194—59 **13 Claims**



1. In a coin-operated door lock of the type in which some movement of the door is possible while the door remains locked, having a curved actuator attached to the door for movement with it past the lower ends of juxtaposed first and second coin chutes and driven as the door is drawn in its direction of opening to unlock the door by contact with the edge of a coin extending beyond the lower end of the second coin chute, the coin being prevented from being pushed by the actuator back up into the chute by a pawl mounted adjacent the chute and having a coin-engaging finger extending into the chute, the pawl being mounted for pivotal motion with respect to the first and second coin chutes and being biased to a first pivotal position relative to the first and second coin chutes, the improvement comprising:

a pawl for enabling the door to be unlocked after a first particular combination of coins has been deposited in the first chute and a second particular combination of coins has been deposited in said second chute, said pawl having a unitary body of substantially uniform thickness and including:

a first finger extending into the first coin chute when said pawl is in the first pivotal position;

a second finger extending substantially parallel to said first finger but spaced from it so that a notch is defined between said first finger and said second finger, said notch being aligned with said second coin chute when said pawl is in the first pivotal position to permit a second particular combination of coins in the second chute to be pushed back up into the chute when said pawl is in the first pivotal position preventing the actuator from being driven to unlock the door;

the tip of said first finger having a shape defining a cam for rotating said pawl to a second pivotal position when the door is drawn in its direction of opening after a first particular combination of coins has been deposited in the first coin chute, the coins in the first chute being forced upwardly against the cam by movement of the curved actuator past the lower end of the first chute;

the rotation of said pawl from the first pivotal position to the

second pivotal position causing said second finger to move into the second coin chute;

the tip of said second finger having a shape defining a coin abutment surface for preventing the second particular combination of coins from moving back up along the second chute when said pawl is in the second pivotal position,

whereby the edge of a coin remains extended beyond the end of the second coin chute to drive the actuator as the door is drawn in its direction of opening, thereby unlocking the door after the first particular combination of coins has been deposited into the first chute and the second particular combination of coins has been deposited into the second chute.

4,243,135

APPARATUS FOR INSERTING PACKS INTO THE GAPS OF A MOVING FILE OF CIGARETTE PACKS OR THE LIKE

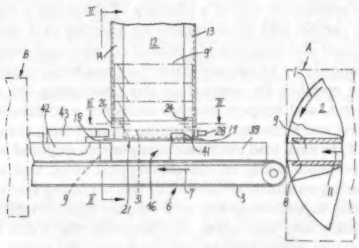
Bob Heitmann, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,323

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1978, 2804230

Int. Cl.³ B65G 47/10

U.S. Cl. 198—370 **9 Claims**



1. Apparatus for filling gaps which develop at times in a file of cigarette packs or like block-shaped commodities having a predetermined width and a predetermined length and advancing from a supplying to a processing machine, comprising a conveyor defining an elongated first path along which said file of commodities moves between said machines in a predetermined direction; a magazine adjacent to one side of and partly overlying said path, said magazine being arranged to store a supply of superimposed spare commodities including a lowermost commodity and said magazine including a support for the lowermost commodity, said support being disposed at a level at least slightly above said path and supporting the lowermost commodity for movement to a position of registry with successive commodities as well as with successive gaps in said path; and means for transferring the lowermost commodity from said magazine to said position whence such lowermost commodity can descend by gravity into an oncoming gap of the file in said path, including a device movable along a second path making an acute angle with said first path so that the lowermost spare commodity which is transferred from said magazine to said position preparatory to descending into said first path has a first component of movement along said support in said direction and a second component of movement along said support at right angles to said direction, the distances covered by the lowermost spare commodity on its way from said magazine to said position of register with a gap therebelow in and at right angles to said direction being respectively less than said predetermined length and width.

4,243,136

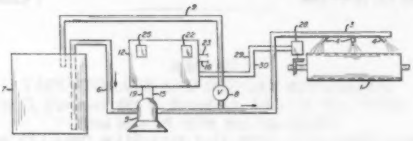
ICING PREVENTION SYSTEM FOR A CONVEYOR BELT

Michael J. Kaufman, R.D. #2, Box 102, Boswell, Pa. 15531

Filed Mar. 12, 1979, Ser. No. 19,669

Int. Cl.³ B65G 47/22

U.S. Cl. 198—493 **5 Claims**



1. An icing prevention system for a conveyor belt exposed to freezing temperatures, comprising a tank for an anti-freeze liquid, a pump for withdrawing liquid from the tank and having an outlet, a spray nozzle connected with said outlet and adapted to be located adjacent a conveyor belt to spray the belt, an electric circuit for operating the pump, a timer switch in said circuit, an electrically operated timer for periodically closing said switch while the timer is operating, and a normally open thermostat in said circuit in series with said timer switch and timer for starting the timer when the ambient temperature falls below a predetermined low temperature and the thermostat closes, whereby said pump will be operated only while both the timer switch and the thermostat are closed.

4,243,137

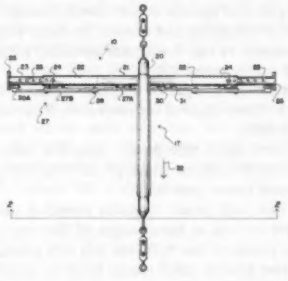
BARN OR PIT FLOOR SCRAPER ASSEMBLY AND DRIVE MEANS THEREFOR

Frank R. Laurenz, Eagle Butte, S. Dak., assignor to Agricultural Research and Development Inc., Eagle Butte, S. Dak.

Continuation of Ser. No. 807,663, Jun. 17, 1977, abandoned. This application Feb. 13, 1979, Ser. No. 11,908

Int. Cl.³ B65G 27/00

U.S. Cl. 198—748 **13 Claims**



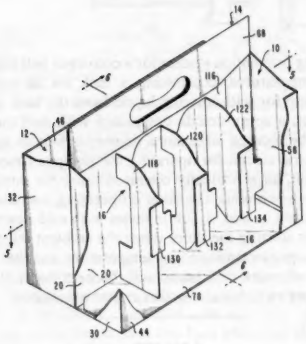
1. A scraper system for barns or pit floors and the like comprising in combination a scraper assembly, and means for operatively connecting said scraper assembly to a source of power to move said scraper assembly back and forth across said floor, said scraper assembly including a hitch component, a frame extending outwardly on each side of said hitch component and a scraper blade component hingedly mounted to said frame and means to mount said scraper blade component for free-floating vertical movement relative to said frame, within limits, said scraper blade component including at least two scraper blades on each side of said hitch operatively connected to said frame, said two scraper blades being attached to said frame with adjacent ends overlapping one another, and means connecting said ends together for free-floating independent vertical movement within limits one relative to the other and each relative to said frame.

4,243,138

THREE-PIECE FOLDABLE BASKET CARRIER AND BLANK FOR FORMING THE SAME

Jerry F. Wilson, West Monroe, La., assignor to Olinkraft, Inc., Denver, Colo.

Filed Apr. 10, 1979, Ser. No. 28,760
Int. Cl.³ B65D 5/48
U.S. Cl. 206—188 7 Claims



1. A foldable basket carrier comprising

front and rear full first center panels;

front and rear full second center panels having inner edge portions overlapping and secured to inner edge portions of the respective full first center panels to form front and rear full center members;

front and rear left side panels hingedly joined at inner edges thereof to outer edges of the respective front and rear first center panels;

front and rear right side panels hingedly joined at inner edges thereof to outer edges of the respective front and rear second center panels;

front and rear wall panels hingedly joined at the right and left edges thereof to outer edges of the respective front and rear panels of the right and left side panels;

front and rear bottom panel means hingedly joined together at inner edges thereof and hingedly joined at outer edges thereof to respective bottom edges of the front and rear wall panels;

said front and rear full center members being hingedly connected together at the top edges thereof, being secured back to back, having finger openings formed through upper portions thereof, and extending substantially the full length and height of the carrier to form a strong full two-ply center support; and

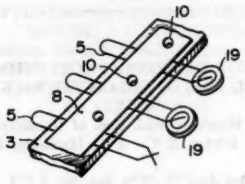
separate front and rear partition means adhesively secured between the front surface of the center support and the front wall panel and between the rear surface of the center support and the rear wall panel, respectively, for forming a plurality of front and rear article receiving cells, a portion of the separate front and rear partition means being sandwiched between and being adhesively secured to the front and rear outer handle panels.

4,243,139

APPARATUS AND PROCESS FOR THE MANUFACTURE OF ELECTRONIC COMPONENTS

Sho Masujima, and Yamamoto Yoshihito, both of Tokyo, Japan, assignors to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

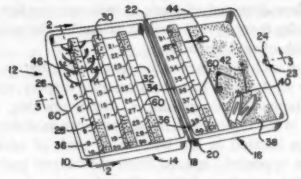
Continuation-in-part of Ser. No. 597,933, Apr. 22, 1975, abandoned. This application Apr. 27, 1977, Ser. No. 791,363
Claims priority, application Japan, Jul. 22, 1974, 49-83893
Int. Cl.³ B65D 73/02
U.S. Cl. 206—330 5 Claims



1. A continuous web of a plurality of electronic component having parallel lead wires suitable for inserting each electronic component into openings of a printed circuit board completely automatically by an automatic inserting machine, comprising a support member for supporting and positioning the parallel lead wires, said support member including a continuous support strip and a continuous opposing support tape, the parallel leads of the axial lead electronic components disposed substantially perpendicularly across the support strip, said support tape having an adhesive on the face thereof facing said support strip, said support strip and said support tape cooperating to hold firmly said lead wires therebetween, the width of said support tape being slightly narrower than the width of said support strip, said support tape and support strip having drive-cooperating means for receiving a drive for transporting and positioning said lead wires and attached electronic components, said drive-cooperating means being circular holds perforated through said support strip and support tape together, said circular holes being spaced apart equidistantly between said lead wires of adjacent electronic components and at precisely positioned intervals in the longitudinal direction along the transverse midpoint of said support strip and tape, the reverse side of said support strip being flat

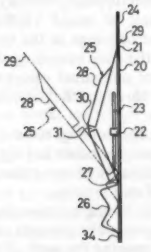
5. A process for the manufacture of a series of electronic components having parallel lead wires, comprising in sequence, the steps of mounting lead wires equidistantly on a support strip having a longitudinal direction, said lead wires being positioned transversely to said support strip and protruding from at least one edge thereof for facilitating attachment to an electronic component, placing the adhesive-coated face on an adhesive tape having a width slightly narrower than that of said support strip coated on only one face against said support strip for fixing firmly and precisely said lead wires therebetween, forming circular holes simultaneously in both said support strip and said adhesive tape at precisely positioned intervals in the longitudinal direction along the transverse midpoint of said support strip equidistantly between said lead wires of adjacent electronic components, moving said support strip in said longitudinal direction by the use of a rotating drive wheel constructed and arranged to meet with said circular holes, and fastening electronic components to said lead wires for support, transport and positioning thereby.

4,243,140
SURGICAL NEEDLE AND SHARPS HOLDING CONTAINER
Robert H. Thrun, Lisle, Ill., assignor to Anchor Products Company, Addison, Ill.
Filed Jul. 13, 1979, Ser. No. 57,290
Int. Cl.³ A61L *17/02*
U.S. Cl. 206—380 **6 Claims**



1. In a hinged disposable container for retaining surgical implements, the improvement comprising: an outside shell means for completely containing the implements comprised of two open-topped boxes; a hinge means for pivotally attaching said open-topped boxes to each other so that said open-topped boxes may be disposed against each other to form one continuous enclosure; a closure means to maintain said open-topped boxes in a closed position; an elongated resilient strip of resilient material which is provided with one or more slots, each slot defining resilient surfaces on either side of the slot which make contiguous contact and are slightly deformed upon a surgical implement being inserted into the slot so as to retain the implement by the frictional forces exerted by said surfaces, said strip being attached to an inside surface of at least one open-topped box; and numerical indicia means provided adjacent to said slots so that each slot is indicated with a sequential number.

4,243,141
NEEDLE PACK
Masamitsu Takahashi, Hiroshima, Japan, assignor to Bankoku Needle Manufacturing Company Ltd., Hiroshima, Japan
Filed Nov. 8, 1979, Ser. No. 92,338
Int. Cl.³ B65D *85/28*
U.S. Cl. 206—380 **3 Claims**



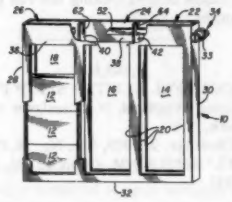
1. A needle pack comprising a substantially rectangular base member, a needle holder attached to said base member, and a substantially rectangular flexible cover member attached to said base member at one end edge, said flexible cover member comprising

a first convex portion covering said needle holder portion and any needles held therein;

engagement means for securing the end edge of said cover member, opposite said attached end edge, to said base member;

means for opening said first convex portion including a second convex portion and a concave portion separating said second convex portion from said first convex portion, whereby when pressure is applied to said second convex portion force is transmitted through said concave portion, said concave portion serving as a fulcrum, to disengage said engagement means and to force said first convex portion away from said base member, thereby opening the needle pack for use.

4,243,142
TAPE STORAGE AND DISPLAY APPARATUS
Dave O. Foreman, 606 E. Broadway, Andrews, Tex. 79714
Filed May 25, 1979, Ser. No. 42,454
Int. Cl.³ A45C *11/28*; A47F *5/12*; E05B *73/00*; B65D *85/67*
U.S. Cl. 206—387 **5 Claims**



1. A storage and display apparatus for holding a plurality of tape decks, comprising:

a main frame having a front panel spaced from a rear panel by opposed sidewalls and parallel divider walls connected therebetween which cooperate together to form a plurality of tape receiving slots within said main frame, said plurality of slots being arranged adjacent to one another;

each said slot having an outwardly directed opening which is closed by a single removable closure means, an end wall opposed to said opening in the slot, said opposed sidewalls extending from said slot opening to said end wall; the main frame has an inner peripheral edge portion which defines a window, said window extends into said slot;

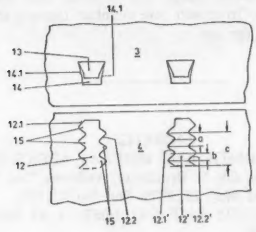
a flange formed by the marginal peripheral edge portion of said window for slidably receiving the opposed marginal edges of a tape deck therewithin;

so that the removable closure means can be removed from the opening of each said slot, a plurality of tape decks can be placed within each said slot, the removable closure means placed to close the opening, whereupon the tape decks are captured within the main body and may be viewed through the window.

4,243,143
WRAPPER FOR A PLURALITY OF ARTICLES ARRANGED IN ROWS
Rolf Muller, Longuich, Fed. Rep. of Germany, assignor to The Mead Corporation, Dayton, Ohio
Filed Mar. 12, 1979, Ser. No. 20,103
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1978, 2810564
Int. Cl.³ B65D *65/00, 75/00*
U.S. Cl. 206—429 **3 Claims**

1. A wrapper for a plurality of articles arranged in rows, such as bottles, cans or the like, comprising overlapping panels secured together by at least one locking tab struck from one of said panels and engageable in a correlated locking aperture provided in the other of said panels, said locking tab being provided with lateral projections along the entire length of the side edges thereof to form wavy lines and the side edges of said

locking aperture diverging inwardly with respect to the end edge of said other panel, characterized in that said wavy lines



along the side edges of said locking tab run parallel with respect to each other.

4,243,144

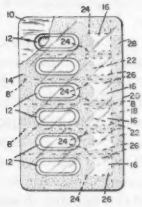
BEND AND PEEL BLISTER STRIP PACKAGE

Herman Margulies, Westfield, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,398

Int. Cl.³ B65D *83/04, 85/56, 75/36, 75/58*

U.S. Cl. 206—532 **21 Claims**



1. A blister strip package comprising a relatively stiff sheet, spaced cavities therein,

a relatively pliable sheet heat sealed in part to the cavity bearing sheet, and being co-terminous therewith, covering the cavities, said blister strip having along an edge thereof a narrow flexible strip extending along the entire line of the cavities and capable of being flexed along a line of perforations in the covering sheet, said line of perforations defining the inside edge of said flexible strip,

an unsealed area between the flexible strip and each cavity, said unsealed areas intersecting the line of perforations and having spaced edges defining lines at the sides thereof, said unsealed areas being spaced, the covering sheet being separable from the sealed flexible strip at the line of perforations to provide a pull tab in the covering sheet which is peelable towards the respective cavity along said edge defining lines, thus forming a peel strip intersecting the respective cavity and providing access thereto.

4,243,145

CASSETTE MODULES AND DISPLAYS FOR TUBULAR ARTICLES

Robert G. Woodhead, Ringoes, N.J., assignor to The American Thread Company, Stamford, Conn.

Filed Jun. 9, 1978, Ser. No. 913,955

Int. Cl.³ A47K *1/08, 1/14;* **B65D** *83/04*

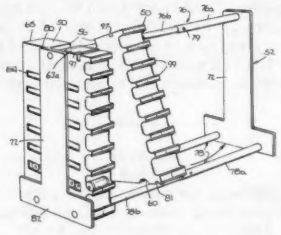
U.S. Cl. 211—49 D **27 Claims**

1. A modular cassette display for tubular articles such as spools of thread comprising a plurality of juxtaposed cassette modules,

each of said cassette modules having a top, a bottom, a front and a rear and a plurality of superposed chambers each for housing a plurality of said articles,

each of said chambers including a supporting surface for the articles inclined downwardly towards said front of said cassette module, an opening for each of said chambers at least in said front sized to permit passage of the articles therethrough, each of said openings to said chambers in said front extending along opposed sides of a respective cassette module, and an approximately vertically-extending surface disposed adjacent to said opening for retaining the articles thereat, said surface extending for substantially the width of said opening,

said display including means for removably juxtaposing said cassette modules to form said cassette display, said means for juxtaposing comprising a single opening centrally located in the top of each of said cassette modules and two openings located in the bottom of each of said cassette modules oppositely spaced from the central part thereof, respective openings being aligned along the tops and bottoms of juxtaposed cassette modules to form series of openings along the tops and bottoms of the juxtaposed cassette modules, a rod extending through each series of aligned openings, and elongated members disposed at exterior sides of exterior cassette modules for preventing movement of the cassette modules therepast, respective members being connected to the ends of respective rods extending through the respective openings, said elongated members extending substantially flush with exterior sides of exterior modules, the openings in the tops of the modules being vertically elongated to provide a space below the rod extending therethrough whereby each of the said cassette modules may be raised vertically a sufficient distance to space the openings in the bottom of the cassette modules from the rods extending therethrough and to permit pivoting of individual cassette modules about the rod extending through the openings in the tops thereof.



14. A cassette module for housing tubular articles such as spools of thread, said cassette module having a top, a bottom, a front and a rear and a plurality of superposed chambers each for housing a plurality of said articles,

each of said chambers including a supporting surface for the articles inclined downwardly towards said front of said cassette module, an opening for each of said chambers at least in said front sized to permit passage of the articles therethrough, each of said openings to said chambers extending along opposed sides of the cassette module, and an approximately vertically-extending surface disposed adjacent to said opening for retaining articles thereat, said surface extending for substantially the width of said opening,

said cassette module being adapted to be removably juxtaposed with similar modules in a cassette display,

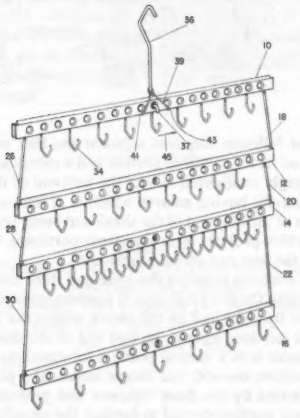
means for removably juxtaposing the cassette modules to form the cassette display comprising at least one opening centrally provided in the top of said cassette module and two openings provided in the bottom of said cassette module oppositely spaced from the central part thereof,

respective openings of juxtaposed cassette modules being adapted to being aligned along the tops and bottoms of the juxtaposed cassette modules to form series of openings, each series of aligned openings being adapted to receive a rod extending therethrough, the opening in the top of said cassette module being elongated to provide a space below the rod adapted to extend therethrough whereby said cassette module may be raised vertically a sufficient distance to separate the openings in the bottom of the cassette module from the rods adapted to extend therethrough and to permit pivoting the cassette module about the rod adapted to extend through the opening in the top of the cassette module.

4,243,146
CUSTOM CHANGEABLE HANGING RACK FOR FINISHING SYSTEM

Walter E. Davitz, Columbus, Ohio, assignor to Production Plus Corporation, Columbus, Ohio

Continuation of Ser. No. 28,277, Apr. 9, 1979. This application May 24, 1979, Ser. No. 41,944
Int. Cl.³ A47F 5/08
U.S. Cl. 211—118 **9 Claims**



1. A support rack of the type having a main frame and workpiece support hooks on which workpieces are hung for transporting the workpieces through a finishing system, said rack, in an operable position, including:

(a) a plurality of generally horizontal, vertically spaced crossbars each having opposed spaced panels, a cross web extending between and longitudinally along said panels and at least one crossbeam near each end of each crossbar extending between said panels and spaced from said cross web;

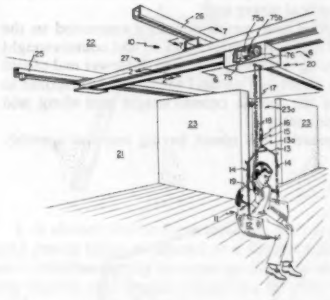
(b) a plurality of manually removable sidebars extending between the adjacent, vertically spaced ends of said crossbars, each sidebar having an upper end for hanging over an upper one of said crossbeams and a lower, inwardly bent leg extending along the underside of a cross web and above a crossbeam of a relatively lower one of said crossbars to a down turned tip; and

(c) removable retaining means inserted between each of said lower legs and its associated crossbeam for extending from said crossbeam to said leg for preventing significant movement of said leg and interfering with said turned down tip to prevent withdrawal of said leg.

4,243,147
THREE-DIMENSIONAL LIFT

Brent L. Twitchell, 3451 W. - 4400 S., Granger, Utah 84120, and Kendel S. Twitchell, 1569 Shenandoah Cr., Murray, Utah 84107

Filed Mar. 12, 1979, Ser. No. 19,865
Int. Cl.³ B66C 17/06
U.S. Cl. 212—159 **21 Claims**



1. A three dimensional lift comprising,

a traveling bridge arranged to span between opposite sides of a room;

channel means secured appropriately in said room for supporting said traveling bridge at its ends such that it can move therealong;

trolley means secured to the ends of said traveling bridge arranged to travel along said channel means for supporting said traveling bridge as it travels along said channel means;

a head arranged to travel back and forth on said traveling bridge;

trolley means secured to said head and arranged with said traveling bridge so as to travel therealong;

two chain means each secured at its ends to opposite ends of the channel means and passes across said traveling bridge, said chain means crossing each other at said head;

two motor means each secured to said head, each having a sprocket means turned thereby, each sprocket means meshing into, to travel along, one of said chain means;

a hoist motor means arranged with said head for turning a pulley means;

a sling means for supporting a handicapped person;

a cable means attached to said sling means and said pulley means;

means for providing power to said two motor means and hoist motor means; and

control means for controlling operation of said two motor means and hoist motor means.

4,243,148
COUNTERBALANCED TOWER CRANE

Neil F. Lampson, Kennewick, Wash., assignor to Riggers Manufacturing Company, Kennewick, Wash.

Filed May 18, 1979, Ser. No. 40,234
Int. Cl.³ B66C 23/76
U.S. Cl. 212—196 **8 Claims**

1. A counterbalanced tower crane comprising:

a tower platform;

vertical tower means having a lower end mounted to said tower platform for rotational movement about a vertical tower axis;

boom means pivotally mounted to said tower means at an elevation above said tower platform for pivotal movement relative to said tower means about a horizontal axis, said

boom means being extended radially outward to one side of the vertical tower axis;

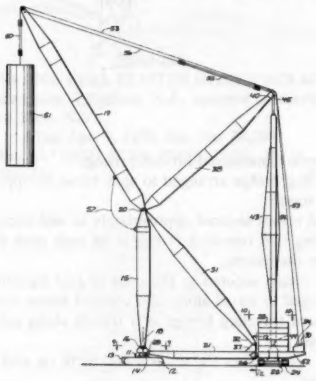
load hoisting means mounted to said boom means;

a mobile counterweight unit spaced a substantial distance radially from said tower platform in diametric opposition to said boom means with respect to said vertical tower axis;

power means mounted to said mobile counterweight unit and operably connected thereto for selectively moving the mobile counterweight unit in a circumferential path about said vertical tower axis;

first rigid spreader link means operably connected to the lower end of said tower means and to said counterweight unit for applying rotational torque to the lower end of said tower means about said vertical tower axis in response to movement of the mobile counterweight unit along said circumferential path;

second rigid spreader link means having one end operably



connected to said tower means at a location above the connection of the tower means and said first rigid spreader link means and its remaining end operably connected to said mobile counterweight unit for applying rotational torque to said tower means in conjunction with said first rigid spreader link means; said second rigid spreader link means overlying said first rigid spreader link means in a vertical rigid triangular structure completed by said tower means and located diametrically opposite the boom means;

powered winching means operably connected to said load hoisting means;

a staymast mounted on said tower means;

a rigid vertical counterweight strut having a lower end operably mounted by the mobile counterweight unit and an upper end connected to the outer end of said staymast; and

guying means operably connected between said boom means and said staymast.

4,243,149

RAILROAD CAR DRAFT GEAR AND COUPLER ARRANGEMENT

Kenneth L. DePenti, Mayfield Heights, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jun. 19, 1978, Ser. No. 916,486

Int. Cl.[3] B61E *9/00*

U.S. Cl. 213—62 A **2 Claims**

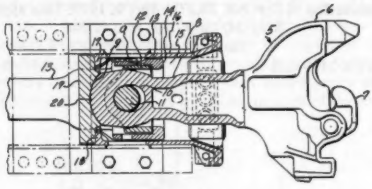
1. A car coupler, comprising:

(a) a chambered head, including means for coupling with an opposing head of another like coupler;

(b) a shank extending from the head and terminating at a generally spherical butt end, the shank having a pinhole extending transversely therethrough adjacent the butt end for receiving a pin used to couple the shank to a rotary mechanism;

(c) a yoke having a pair of opposing longitudinally extending sidewalls between which is an opening in which the butt end of the shank is received, the yoke including (i) a plurality of lugs extending into the opening in spaced relation from the butt end of the shank to restrict movement of a rotary mechanism coupled to the shank, in a rearward direction away from the head, and (ii) an opening in one of the sidewalls through which a pin is inserted into the pinhole which is aligned with the sidewall opening when the shank is rotated about its longitudinal axis generally 90° from its position where the head is in a normal neutral position for coupling with a head of another like coupler;

(cc) a rotary mechanism mounted in the yoke for rotation about the longitudinal axis thereof, the rotary mechanism disposed between the yoke and the shank, adjacent the butt end thereof, and having a pair of spaced, aligned openings for receiving opposing ends of the pin used to couple the shank and rotary mechanism together;



(d) a front follower disposed adjacent the butt end of the shank and having a planar portion and a spherical concavity matingly configured to seat the butt end of the shank, the concavity having an area which is at least as large as the area of the butt end of the shank and being bounded by a rim which projects from the planar portion in the direction of the butt end of the shank; and

(e) means coacting between the yoke and front follower for maintaining the front follower in a predetermined position adjacent the butt end of the shank where the front follower is unbiased against the butt end of the shank, when the coupler is in a neutral position intermediate buff and pull positions thereof, said means including a plurality of stops carried by the front follower and projecting from the planar portion thereof to contact the plurality of lugs carried by the yoke and hold the front follower and butt end of the shank slightly apart so that the shank can be rotated, by hand, about its longitudinal axis after insertion of the pin to couple the shank and rotary mechanism together.

4,243,150

BOTTLE SEAL

Ingemar Gunne, Sollentuna, and Bertil Almgren, Vällingby, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 23, 1978, Ser. No. 871,535

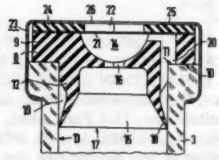
The portion of the term of this patent subsequent to Aug. 7, 1996, has been disclaimed.

Int. Cl.[2] B65D *47/36, 49/00*

U.S. Cl. 215—247 **7 Claims**

1. In a bottle seal including a resilient material stopper having a first axial end section adapted to overlie an axial end of a bottle neck and having a radially extending surface for sealingly engaging the axial end of the bottle neck, the stopper having an axial extension for projecting into the bottle neck and sealingly engaging the inner diameter of the bottle neck, with a slit through the stopper for receipt of a liquid with-

drawal needle, and a metal cap overlying the stopper and adapted to attach the stopper to the bottle neck, the metal cap having an opening through an end face thereof aligned with the slit, the improvement of a thin foil member interposed between an axial end of the stopper exterior of the bottle and the metal cap, the foil underlying the opening in the metal cap and overlying the slit, the foil sealing the stopper, and the foil being piercable by a liquid withdrawal needle, a resilient disk is interposed between the metal cap and the foil, the resilient disk



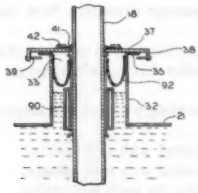
having a central slit therethrough, the slit aligned with the opening in the metal cap and with the slit in the stopper, the stopper has an axial extension receivable interior of the neck of the bottle, the axial extension terminating interior of the neck of the bottle in a lip seal engageable with an inner diameter wall of the bottle neck, the extension having an annular groove therearound for defining an air spaced between the extension and the inner diameter wall of the neck of the bottle adjacent the lip seal, an air channel communicating the groove to the exterior of the stopper interior of the foil.

4,243,151

FLOATING ROOF PENETRATIONS WITH REDUCED VAPOR SPACE SEAL

Robert A. Bruening, 1541 Chippewa Dr., Naperville, Ill. 60540

Filed Jul. 2, 1979, Ser. No. 54,172
Int. Cl.³ B65D *87/18*
U.S. Cl. 220—216 **1 Claim**



1. In a storage tank for a liquid having a floating roof and at least one stationary vertical member penetrating the floating roof through a well defined by an opening therein surrounded by a well wall partially in and partially above the level of a liquid stored in the tank, the improvement comprising:

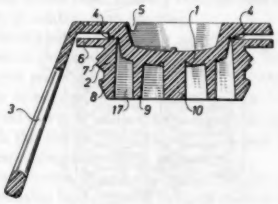
a vapor seal means covering the area between the vertical member and well wall positioned about at but above the liquid level in the well to thereby reduce the space in which vapor from the liquid can first accumulate and then be dispersed with vertical movement of the floating roof, with said seal means comprising a vertically displaceable shoe surrounding the stationary vertical member and a flexible membrane extending from the shoe to the well wall.

4,243,152

TEAR-UP CLOSING DEVICE FOR CONTAINERS

Rolf L. Ignell, Divonne-les-Bains, France, assignor to Tetra Pak Developpement SA, Lausanne, Switzerland

Filed Jan. 24, 1977, Ser. No. 762,137
Claims priority, application Sweden, Jan. 30, 1976, 7600989
Int. Cl.³ B65D *17/34, 39/00*
U.S. Cl. 220—270 **7 Claims**



1. A closure device for a container for pressurized contents said device being composed of a flexible plastic material and said container having an upper portion provided with an opening therein, said device comprising an outer tubular element with means on the outside thereof for engaging the inner wall of the opening in the container to form a gas tight and mechanically stable seal therewith and to provide a pouring opening for the container, said outer tubular element further having a bottom end surface which is spaced axially inward from said inner wall of the opening in the container, an inner element provided with a pull tab and extending downwardly within said outer tubular element, said outer tubular element and said inner element being connected to each other by a severable connecting wall around the upper inner circumference of said outer tubular element to close the pouring opening, said inner element including a depending peripheral wall portion spaced from said outer tubular element and a depending central portion disposed within and spaced from the depending peripheral wall portion, the bottom end surfaces of said outer tubular element and the peripheral wall and central portions of said inner element lying in substantially the same plane, and a substantially gas impermeable and tearable disc member sealed to the bottom end surfaces of said outer tubular element and the peripheral wall and central portions of said inner element, said depending peripheral wall portion being further constructed and arranged to be readily removable from said outer tubular element and to retain said disc member in sealing contact therewith when said inner element and outer tubular element are separated, whereby when the tab is pulled up said inner element is removed from said outer tubular element by severing the connecting wall and said tearable disc member to open the pouring opening.

4,243,153

BOWL AND LID DISPENSER

Phillip E. Mitchell, 8511 Brookside Dr. West, Pewee Valley, Ky. 40056

Filed Apr. 12, 1979, Ser. No. 29,332
Int. Cl.³ B65H *1/00*
U.S. Cl. 221—34 **8 Claims**

1. A bowl dispenser assembly comprising

a housing open at one end,

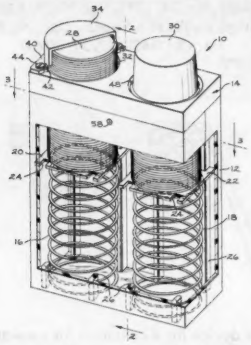
a spring coil disposed in said housing,

an article supporting plate resting on said coil,

a plurality of raised, elongated ribs formed on and extending along inside walls of said housing, said plate defining slots opening toward said walls, said ribs projecting into said slots to form rails along which said plate can be raised and lowered,

a housing cover disposed over the open end of said housing and defining a circular opening through which a stack of bowls supported by said plate may extend, and

at least three nibs of generally elliptical cross-section stationarily attached to and projecting downwardly from a ceiling of said housing cover around and below said opening



and projecting inwardly of the periphery of said opening sufficiently to interfere with a top rim of a top one of said bowls to confine said bowls and maintain said coil in compression against said plate.

4,243,154

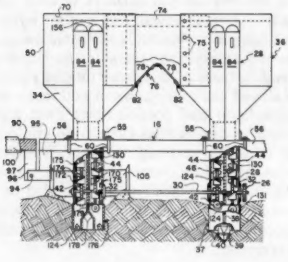
SEED PLANTING MACHINES

Carl D. Freeman, Idaho Falls, and Melvin G. Grover, Rigby, both of Id., assignors to Logan Farm Equipment Co., Inc., Idaho Falls, Id.

Division of Ser. No. 851,921, Nov. 16, 1977, which is a continuation-in-part of Ser. No. 676,836, Apr. 10, 1976, abandoned. This application Jul. 11, 1979, Ser. No. 56,550

Int. Cl.³ A01C *9/02*

U.S. Cl. 221—253 **6 Claims**



1. A machine for setting seeds including a circulating planting device having a seed discharge tube, one end of which terminates in a seed discharge location at the bottom of the machine, which location in the field operation of the machine is positioned immediately above and is moved substantially parallel to the center-line of a furrow in which seeds are to be planted, said planting device being driven on upper and lower supporting shafts and having seed conveyances mounted thereon in at least one row, and a seed receptacle associated with said planting device, said conveyances each having an open top into which seed is loaded as said conveyances pass upwardly through said seed receptacle, each loaded conveyance thereafter passing around an associated upper one of said shafts, and reversing direction and being inverted, enters said discharge tube and drops its seed up on the bottom surface of the immediately preceding inverted conveyance therein, upon which bottom surface the seed descends supported by the interior wall of said discharge tube to said seed discharge location, said conveyances each having an inclined bottom surface and being so mounted on said planting device that at said seed discharge location said inclination is transverse with respect to the furrow whereby the seed supported thereon is guided for controlled deposit thereof in the furrow.

4,243,155

VALVING AND AUTOMATIC PRESSURE REGULATOR FOR INHALATION APPARATUS

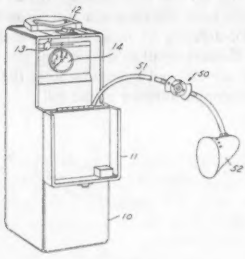
Maurice M. Stewart, West Bloomfield, Mich., assignor to Oxygen Therapy Institute, Inc., Oak Park, Mich.

Continuation of Ser. No. 900,916, Apr. 28, 1978, abandoned, which is a continuation of Ser. No. 761,802, Jan. 24, 1977, Pat. No. 4,109,828. This application May 29, 1979, Ser. No. 43,748

The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.

Int. Cl.³ B67D *5/22*

U.S. Cl. 222—3 **8 Claims**

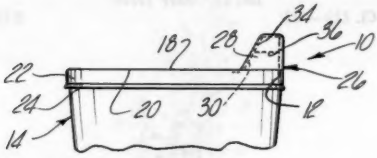


1. In an inhalation apparatus, the combination comprising
an automatic pressure regulator including a body,
said body having an opening for receiving a valve of an oxygen tank,
said body having an outlet,
said body including two chambers,
a connecting passage extending from one chamber to the other,
an inlet passage extending to one said chamber,
each said chamber having a diaphragm closing one wall thereof,
spring means yieldingly urging said diaphragm in one direction,
an orifice associated with said inlet,
an orifice associated with said passage,
an orifice member for each said orifice,
a lever for each said chamber,
means for pivoting each said lever to its respective diaphragm,
said lever having one end thereof pivotally connected to its respective diaphragm and the other end thereof engaging its respective orifice member,
said means for pivoting said lever to its respective chamber comprising spaced groove shaped open recesses in said body,
a pin extending through said lever and having its ends engaging said groove shaped recesses,
and screw means threaded into said body and having a head removably engaging said pin and comprising the sole means for holding said pin in said recesses against movement out of said recesses.

4,243,156
CLOSURE FOR A BEVERAGE RECEPTACLE

David A. Lobbestael, 1148 Dexter-Pinckney Rd., Pinckney, Mich. 48169

Filed Mar. 19, 1979, Ser. No. 21,991
Int. Cl.[3] B65D *41/32*
U.S. Cl. 222—541 6 Claims

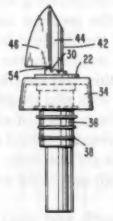


1. A closure for use with a beverage receptacle having an open top, said closure comprising:
- a substantially planar lid having an upper and a lower side and substantially conforming in shape to the open top of the receptacle;
- said lid including a rim about its outer periphery, said rim extending outwardly from the lower side of the lid and being dimensioned to frictionally engage the open top of the receptacle to thereby retain said lid to said receptacle;
- said lid further comprising a tubular spout having a restricted fluid passageway formed adjacent the periphery of said lid and extending outwardly from the upper side of the lid, said spout being open at one end to the lower side of the lid and, at its other end, having a cap integrally formed with and closing said spout;
- means formed on said spout to permit manual detachment of said cap from said spout;
- wherein said means further comprises a series of indentations formed between said cap and said spout; and
- wherein said cap includes a cavity at its end most spaced from spout.

4,243,157
ADJUSTABLE POURING DISPENSER

Leonard W. Rettberg, Linesville, Pa., assignor to Interproduct B.V., Driebergen, Netherlands

Filed Jun. 19, 1979, Ser. No. 49,978
Int. Cl.[3] B65D *25/48*
U.S. Cl. 222—44 1 Claim

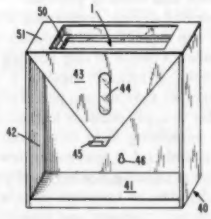


1. An adjustable pouring dispenser for a liquid container comprising
- a housing including a cylindrical chamber, said chamber having an open upper end bounded above by a substantially helicoid surface and a closed lower end;
- a ball movably disposed in the chamber, said ball having a diameter approximately equal to that of the chamber;
- an aperture through the closed lower end of said chamber to admit a controlled flow of liquid into said chamber to control the rate of movement of said ball in said chamber;
- a plurality of ports extending through said housing into said chamber intermediate the upper end and the lower end of said chamber to permit liquid to flow into the chamber;
- a spout having a cylindrical sleeve with a through bore to allow liquid to flow out of the chamber, said sleeve having a lower end positioned movably and sealingly within the upper end at the chamber and partially obstruction said ports to determine the dispensing volume;
- a seat for said ball formed in the lower end of said sleeve to prevent liquid from flowing through said bore when the ball is in contact with the seat;
- said helicoid surface having a plurality of detents formed therein at progressively varying heights from said ports;
- an integral projection extending radially outward from said sleeve to engage any one of said detents thereby to position said sleeve in said chamber, determining the degree to which the sleeve obstructs the ports and determining a corresponding dispensing volume;
- a circumferential flange extending radially outward from said housing between said helicoid surface and said ports;
- a plurality of indices representing dispensing volumes ranging from about one-half ounce to about one and one-half ounces formed on the upper surface of said flange, one indicium adjacent each detent; and
- a vane extending radially outward from said sleeve adjacent said projection and above said flange so as to overlie any one of said indices to indicate a corresponding dispensing volume.

4,243,158
GRANULAR PRODUCT DISPENSER

Edward W. Negosta, 4803 Old Branch Ave., Camp Springs, Md. 20031

Filed Feb. 22, 1979, Ser. No. 14,258
Int. Cl.[3] B67D *5/38*
U.S. Cl. 222—184 8 Claims



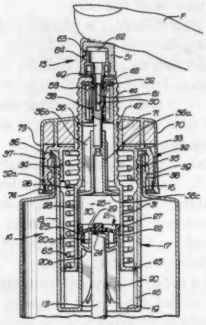
1. A combined holder and dispenser for dispensing granular products from their original package comprising:
- a rectangular package receiving portion said package receiving portion including adaptor means for adapting said package receiving portion to receive an original package of a different size, a funnel portion connected to said rectangular package receiving portion, said funnel portion including a discharge port and a gate valve assembly at the mouth thereof for controlling the discharge of granular products, and a supporting base for supporting said receiving portion and said funnel portion, said base including a shelf disposed below said valve assembly for supporting a granular product receiving cup.

4,243,159

PUMP DEVICES FOR DISPENSING FLUIDS

Walter B. Spatz, Pacific Palisades, Calif., assignor to Spatz Corporation, Los Angeles, Calif.

Filed Feb. 22, 1979, Ser. No. 13,878
The portion of the term of this patent subsequent to May 22, 1996, has been disclaimed.
Int. Cl.[3] B67D *1/08, 5/40*
U.S. Cl. 222—188 14 Claims



1. A fluid dispensing device, comprising a container for the fluid, pump means mounted in said container and including a housing fixed with respect to said container, a cylinder in said housing shiftable with respect to said housing, said cylinder having a pump chamber therein, said pump means further including an elastomeric piston fixed to said housing and disposed in said chamber in slidable sealed relation to said cylinder, a first valve means permitting fluid flow from said container into said chamber, but preventing reverse fluid flow, spring means for shifting said cylinder and its chamber in one direction with respect to said piston to cause said cylinder to apply pressure to fluid in said chamber, a second valve means permitting discharge of pressurized fluid from said pump chamber in response to shifting of said cylinder and its chamber in said one direction by said spring means, said housing having a portion embracing a skirt portion of said piston, said skirt portion being subject to the pressure of fluid in said chamber to urge and hold said skirt portion outwardly in firm sealing engagement with said housing portion.

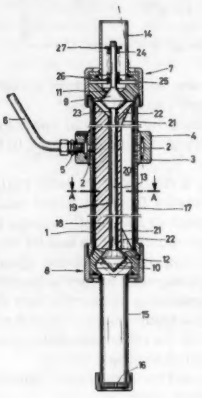
14. A fluid dispensing device, comprising a container member for the fluid, pump means in said container member including a housing member, a piston in said housing member, and a cylinder in said housing member having a pump chamber therein, spring means for moving said piston and cylinder with respect to each other to apply pressure to fluid in said chamber, first valve means permitting fluid flow from said container member into said chamber, but preventing reverse fluid flow, second valve means permitting discharge of pressurized fluid from said pump chamber in response to relative movement between said piston and cylinder, and one-way check valve means including an annular elastomeric sleeve disposed in an annular space between said container member and housing member, means for securing one portion of said sleeve to said container member, said elastomeric sleeve having a thick portion disposed between and simultaneously engaging the opposed cylindrical walls of said container member and housing member and provided with a plurality of longitudinal grooves facing said housing member and through which ambient air can flow, said sleeve further including a circumferentially continuous thinner portion adjacent said thick portion sealingly engaging said housing member, said thinner portion being deflectable from sealing engagement with said housing member by the ambient air upon subatmospheric pressure being present in said container member.

4,243,160

DEVICE FOR FILLING A MEASURED QUANTITY OF A FLOWING MEDIUM INTO A PACKAGE

Wilhelm Reil, Bensheim-Auerbach, Fed. Rep. of Germany, assignor to Tetra Pack Developpement SA, Switzerland

Filed Jul. 17, 1978, Ser. No. 925,175
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734251
Int. Cl.[3] G01F *11/08*
U.S. Cl. 222—373 3 Claims



1. A device for filling a specified quantity of a flowing medium into packages from a supply of the medium; characterized by

a tubular housing,

inlet and outlet fittings on the ends of said housing providing inlet and outlet valve seats,

a flexible tubular sheath within said housing and clamped in sealed relation at its opposite ends to said housing by said fittings,

inlet and outlet valves cooperating with said valve seats and arranged to admit the medium into said sheath and to permit discharge of the medium from said sheath and to prevent flow of the medium in the reverse direction,

a supporting body within said sheath located between said valves and defining with said sheath at least one chamber of precise volume, the interior of said housing exposed to said sheath and the exterior of said supporting body being substantially equal in surface area,

a rod extending through said body and mounting said inlet and outlet valves,

said sheath together with said body and said valve seats defining a passageway through said device essentially without crevices and thereby capable of complete cleansing by flowing a cleansing fluid therethrough,

an opening through said housing to the exterior of said sheath,

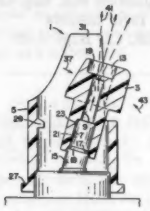
means for selectively supplying gas under pressure through said opening to force said sheath against said supporting body whereby to expel the medium from said chamber through said outlet valve,

and flexible hoses connected to supply medium to said inlet and to supply compressed gas to said opening and thereby allowing limited movement of the device.

4,243,161
CONTINUOUS SPRAY BUTTON

Ronald F. Ewald, Rolling Meadows, Ill., assignor to Seaquist Valve Co., Div. of Pittway Corp., Cary, Ill.

Filed Mar. 17, 1978, Ser. No. 872,236
Int. Cl.[2] B65D *83/14*
U.S. Cl. 222—402.14 13 Claims

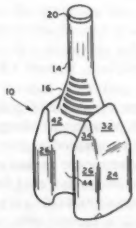


1. A continuous spray button assembly for use with a tilt valve having a valve turret, comprising in combination:
a tubular sleeve;
a valve button;
said tubular sleeve configured and dimensioned to be rigidly attached to the valve turret of the tilt valve;
said tubular sleeve extending from the valve turret of the tilt valve to at least partially encircle the outer perimeter of said valve button;
said valve button configured to actuate the tilt valve when moved into a tilted position;
a retaining means including a latch coacting between said valve button and said tubular sleeve to retain said valve button in said tilted position upon actuation of the tilt valve for enabling continuous spray; and
said latch configured to release the tilt valve from the tilted position to the non-tilted position upon relative movement between said valve button and said tubular sleeve for interrupting the continuous spray.

4,243,162
VESSEL STRUCTURE

Mindaugas J. Klygis, Barrington, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Aug. 15, 1979, Ser. No. 66,602
Int. Cl.[3] B65D *1/02*
U.S. Cl. 222—530 9 Claims

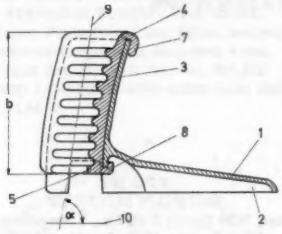


1. A unitary vessel comprising a hollow body for containing a quantity of fluid; an elongated pouring spout integrally associated with said hollow body and communicating with said hollow body, said pouring spout being bendable between a pouring position to permit pouring of the fluid from the hollow body and a storage position substantially along said hollow body to permit efficient storage of said vessel; a flexible neck portion integrally formed connecting the hollow body and the pouring spout, said flexible neck portion being bellows-like to permit freely bending of the spout relative to the body, said bellows-like neck portion including undulations in planes extending generally perpendicular to the longitudinal axis of the spout when in a pouring position so that the spout may be freely and consecutively bent to and from a retained position, said hollow body, spout and neck portion formed from a resilient plastic material and retaining means carried by said hollow body for releasably retaining said spout in said storage position, said retaining means also being integrally formed of the same resilient plastic material and forming part of the outer periphery of the hollow body, at least one wall of the hollow body being contoured to thereby define said retaining means, the retaining means further defining a recessed portion in said at least one wall dimensioned for receiving said spout and including a throat portion with an opening defining a transverse dimension slightly smaller than the maximum transverse dimension of said spout, the maximum transverse dimension of said recessed portion being at least equal to the maximum transverse dimension of the spout thereby adapted to releasably receive the spout through said throat opening when the spout is bent about said neck portion for selectively retaining the spout within the recessed portion.

4,243,163
DEVICE FOR DRAWING A BOOT OFF THE FOOT

Axel Kubelka, Vienna, Austria, assignor to Polyair Produkt Design GmbH, Kittsee, Austria

Filed Feb. 27, 1979, Ser. No. 16,342
Claims priority, application Austria, Mar. 3, 1978, 1543/78
Int. Cl.[3] A47J *51/02*
U.S. Cl. 223—115 15 Claims



1. Device for drawing a boot off the foot, comprising jaws partially embracing the boot, characterized in that the height of the jaws is greater than its inside width, the jaws are provided with a cladding of elastomeric synthetic plastic material which is profiled with ribs arranged one above the other in a direction transverse to the axis of the jaws, the surface of said cladding contacting the boot has a Shore-hardness of maximum 60 Shore A, preferably between 20 and 60 Shore A.

4,243,164
GAME DRAGGING DEVICE

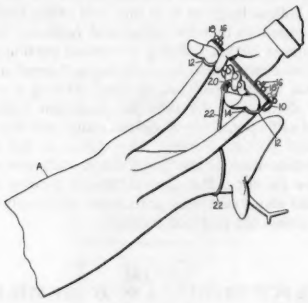
Larry J. Burlison, 7038 N. 3rd St., Turner, Oreg. 97392, and Dale E. Burlison, Rt. 1, Box 66, Jefferson, Oreg. 97352

Filed Jun. 26, 1978, Ser. No. 919,427
Int. Cl.[3] B65D *71/00*
U.S. Cl. 224—52 3 Claims

1. A game dragging device comprising
(a) a rigid bar having opposite ends,
(b) a pair of U-bolt clamps on said bar,
(c) each of said clamps having leg portions extending slidably through said bar,
(d) said clamps forming loops on one side of said bar and said leg portions projecting from the opposite side of said bar,
(e) each of said loops projecting in the same direction from said bar and being spaced on opposite sides of the longitudinal center of the bar,
(f) releasable fasteners adjustably engageable with the projecting leg portions of said clamps,

(g) said loops being arranged to be enlarged and diminished in size by adjustment of said fasteners for receiving foot portions of a dead game animal and cinching such animal foot portions firmly up against said bar,

(h) an eye portion extending integrally from said bar at about the longitudinal center thereof and in the same direction as said loops,



(i) and a flexible line connected at one of its ends to said eye portion and including connecting means at its other end arranged to be secured to the neck or head portion of an animal for holding the head in elevated position while the animal is being dragged.

4,243,165

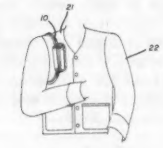
SHOTGUN BUTT CUP

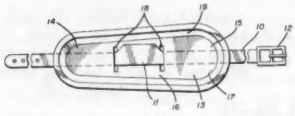
Larry Schuler, 7650 Spring Park Dr., Youngstown, Ohio 44512

Filed Jun. 22, 1979, Ser. No. 51,432

Int. Cl.³ F41C *29/00, 7/00*

U.S. Cl. 224—149 **3 Claims**





1. A gun butt cup for attachment to a gun user in a preferred location comprises an elongated ovaloid base member, one end portion of which is narrower than the other so as to match the end configuration of a shotgun stock butt, a substantially perpendicular continuous flexible wall on the peripheral edge of said ovaloid base member defining a gun stock butt shaped receptacle for the reception of a gun stock butt, attachment means on said base member for wrap around engagement on a user's shoulder and cushioning means on said base member within said continuous wall.

4,243,166

METHOD FOR SEPARATING AND STACKING SHEETS OF PAPER AND THE LIKE

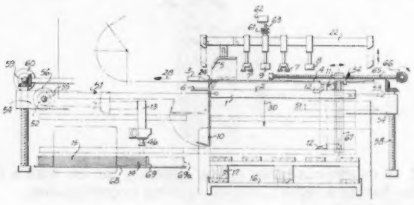
Franz Vossen, Brüggen, and Georg M. Vossen, Niederkrüchten, both of Fed. Rep. of Germany, assignors to Wupa-Maschinenfabrik GmbH, Fed. Rep. of Germany

Division of Ser. No. 805,418, Jun. 10, 1977, Pat. No. 4,171,081. This application Jun. 18, 1979, Ser. No. 49,550

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1976, 2626630; Jul. 3, 1976, 2630094

Int. Cl.³ B26F *3/02*

U.S. Cl. 225—1 **12 Claims**



6. A method of stacking sheets of paper, cardboard and the like, which are delivered from a sheet punching machine and which consists of useful and waste portions connected together by small fillets and, separating said sheets to form separate stack portions, comprising the steps of:

(a) supplying punched, but not yet separated, sheets onto a severing table;

(b) severing said sheets into sheet portions to form separate stack portions; and

(c) depositing said separate stack portions onto a stacking surface after withdrawing said severing table from under said separate stack portions.

4,243,167

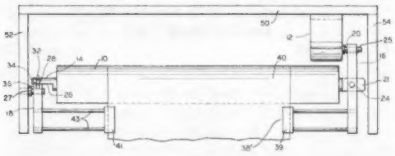
WEB GUIDE SYSTEM

Frank Sander, 4744 N. Kenneth, Chicago, Ill. 60630

Filed Oct. 23, 1978, Ser. No. 953,951

Int. Cl.³ B65H *25/26*

U.S. Cl. 226—21 **8 Claims**



1. A web guide system to control the lateral alignment of a continuous moving web of material comprising a drive motor means; a first arm means mounted at one end on a first pivot point located on said drive motor means and extending downward from said drive motor means, said first arm means pivoting in a first vertical plane about said first pivot point when said drive motor is activated; a second arm means mounted on a second pivot point laterally spaced from said first pivot point, said second arm means being L-shaped, with a first leg aligned parallel to said first arm means in said first vertical plane and a second leg aligned perpendicular to said first leg, said second arm means being adapted to pivot about said second pivot point located at the outer extremity of said second leg in a second vertical plane spaced parallel to said first vertical plane; guide roll means over which said moving web of material passes in a 90° wrap; support shaft means upon which said guide roll is rotatably mounted, said support shaft means extending between said first and second arm means, one end of said support shaft pivotally mounted on said first arm means,

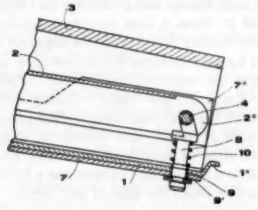
and the opposite end pivotally mounted on said second arm means, whereby pivoting movement of said first arm means responsive to said drive motor means will cause the end of said support shaft mounted on said first arm means to move over an arc in said first vertical plane and the opposite end of said support shaft pivotally mounted on said second arm to move over an arc in said second vertical plane, shifting the lateral position of said web of material moving over said guide roll; scanner means extending between said first and second arm means to detect lateral misalignment of said moving web of material and to activate said drive motor means when lateral misalignment of said web is detected.

4,243,168

OFFICE STAPLER DEVICE

Giorgio Balma, Viale Umberto 1°, 35, 27058 Voghera Pavia, Italy

Filed Dec. 22, 1978, Ser. No. 972,251
Claims priority, application Italy, Jan. 27, 1978, 19744 A/78
Int. Cl.³ B25C *5/02*
U.S. Cl. 227—119 **1 Claim**



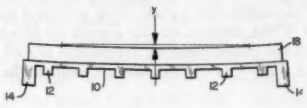
1. In a stapler apparatus having a base, an intermediate elongated body having a U-shaped transverse cross section connected to said base for pivotal movement relative thereto, an elongated guide member supported within said intermediate body and having a transverse cross section disposed to receive staples for use with the stapler apparatus, an elongated counter-guide member carried on said intermediate body and cooperating with said guide member to guide said staples therealong, means on said intermediate body adjacent one end of said guide member and defining with said guide member a passage for the exit of said staples one at a time, an elongated cap member supported by said base for pivotal movement relative thereto and for pivotal movement relative to said intermediate body, and a driver blade carried by said cap member and disposed for insertion into said passage to forcibly eject said staples therethrough, one at a time, the improvement which comprises means connecting said guide member to said intermediate body for limited oscillatory movement relative thereto between a normal operating position of said guide member and a staple-jam-clearing position thereof in which said passage is enlarged to accommodate expulsion therefrom by the action of said driver blade of a staple jammed in the passage, said guide member having a projection accommodating manually imparting said oscillatory movement to the guide member; said counter-guide member being releaseably connected to said cap member by a projection extending through a slot in said driver blade to allow pivoting said cap member away from said counter-guide member to facilitate access thereto; V-shaped notches in said intermediate body disposed for receiving engagement with a resiliently biased pin carried by said counter-guide member to releaseably connect said counter-guide member to said intermediate body and allow pivoting said counter-guide member away from the intermediate body to provide access to staples on said guide member, said V-shaped notches being disposed to hold said pin to position the counter-guide member at a predetermined clearance distance from staples on the guide member.

4,243,169

DEFORMATION PROCESS FOR PRODUCING STRESS RELIEVED METAL/CERAMIC ABRADABLE SEALS

Raymond V. Sara, North Olmstead, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 27, 1978, Ser. No. 973,553
Int. Cl.³ B23K *1/19*
U.S. Cl. 228—175 **16 Claims**



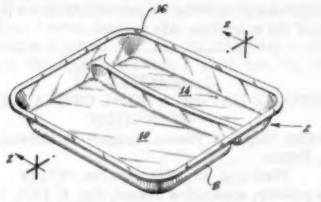
1. Process for bonding a multi-layer metal/ceramic abradable composite to a deformable metallic substrate which comprises placing said abradable composite, in the unsintered state, with its metal-rich surface in contact with said substrate, heating said composite and substrate under pressure to a sintering temperature sufficient to sinter said composite and bond to said substrate, maintaining such a temperature until said sintering and bonding are complete, substantially removing said pressure, then cooling the thus formed structure to ambient temperature and then fastening reinforcing members to the backside of said substrate to rigidify it.

4,243,170

FOOD CONTAINER AND PROCESS FOR MANUFACTURING THE SAME

Michael D. Jones, White Bear Lake, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jul. 21, 1978, Ser. No. 927,173
Int. Cl.³ B65D *1/00*; H05B *6/64*; A23L *3/00*; B65D *85/00*
U.S. Cl. 229—2.54 R **5 Claims**



1. A Container especially adapted for use in storing and heating comestibles intended for final preparation in microwave ovens, comprising:

(a) a tray constructed of a molded pulp member having a continuous inside surface defined by an upstanding sidewall tapered inwardly from an open top to a smoothly rounded corner which joins with a bottom wall, said molded pulp member comprising pulp fiber material defining a multiplicity of interstices in said member to provide said member with sufficient porosity to allow passage of gas therethrough; and

(b) a continuous thermoplastic film adhered to said inside surface.

4,243,171

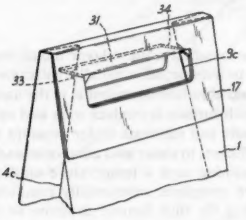
CARRIER FOR PACKING AND CARRYING ARTICLES

Jean-Claude Prin, 44 avenue Gallieni, 10300 - Sainte Savine, France

Filed Apr. 26, 1979, Ser. No. 33,803
Claims priority, application France, May 25, 1978, 78 1552
Int. Cl.³ B65D *5/46, 33/08*
U.S. Cl. 229—52 B **4 Claims**

1. In a carrier for packing and carrying articles, of the type

comprising a bag composed of a rectangular or square bottom, two opposite main faces and two extendible side gussets and provided with gripping means at its end opposite said bottom, said carrier being made in the form of a box by folding and gluing a single blank made of a material which is both supple and rigid, such as cardboard, and said gripping means being constituted by a system of openings and a flap, forming an integral part with said blank and ensuring that the upper edges of the opening of the bag come together and that said bag is closed, said extendible side gussets being provided with longitudinal lines of fold, wherein the side gussets are provided with at least one set of intermediate transverse lines of fold enabling them to give the bag, as desired, either a section which tapers



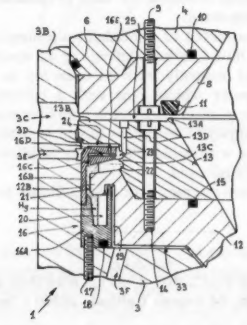
continuously from the bottom to the gripping means, or a constant section between the bottom and said intermediate lines of fold then a section continuously tapering from said intermediate lines of fold to the gripping means, the improvement in which said gripping means comprises three openings in registry, made respectively in the two main faces and the flap while, in the opening of the flap, there is provided a foldable tongue adapted to take a position which is substantially parallel to said bottom, said tongue being joined by a fold line to one margin of said opening in the flap and being locked in the openings in the main faces by cooperative engagement of the opposite end margins of the tongue with notches provided in the folds of the extendible side gussets.

4,243,172

CENTRIFUGES HAVING A BOWL OPENABLE WHILE IN OPERATION

Denis Buffet, Meyzieu, France, assignor to Robatel, S.L.P.I., Genas, France

Filed Aug. 25, 1978, Ser. No. 937,001
Claims priority, application France, Sep. 6, 1977, 77 27536
Int. Cl.[2] B04B *1/14*
U.S. Cl. 233—20 A **10 Claims**



1. A centrifugal separator for the treatment of a liquid product containing sludge in suspension, comprising:

a bowl rotatably mounted about an axis, said bowl including a bottom, a cover, and a cylindrical intermediate flange portion disposed between said bottom and said cover, said flange portion having sludge discharge openings;

a movable piston-like member coaxially located in the bowl and forming a secondary bottom, the member being movable along said axis between a first position in which it uncovers said discharge openings and a second position in which it closes said discharge openings;

means to inject a control liquid between said bottom and said piston-like member to cause said piston-like member to move from said first position to said second position against the pressure exerted by the treated product retained between said cover and said piston-like member; and

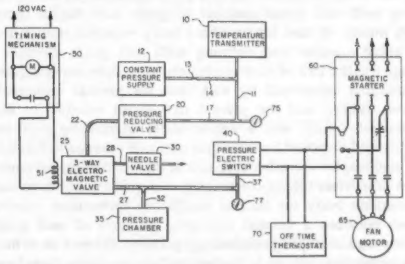
slidable sealing means disposed between said movable piston-like member and said intermediate cylindrical flange portion, the sealing means comprising an hydraulic seal using a sealing liquid having a higher density than said control liquid, said hydraulic seal comprising annular nose means extending radially outwardly from said piston-like member and an annular gutter-shaped member extending radially inwardly from said cylindrical intermediate flange portion, the gutter-shaped member having radially inwardly extending annular means on opposite sides of said annular nose means and confining said higher density sealing liquid to form a first peripheral column of said higher density sealing liquid which is exposed to the pressure created by said control liquid between said bottom and said piston-like member, and further to form a second peripheral column of said higher density sealing liquid which is vented toward said cover and exposed to atmospheric ambient pressure; and further to define a third peripheral column of said higher density liquid which connects said first and second columns at a location which is radially further from the axis of said bowl.

4,243,173

PNEUMATIC OPTIMIZER

Gaylen V. Atkinson, Salt Lake City, Utah, assignor to Mark Controls Corporation, Evanston, Ill.

Filed Apr. 30, 1979, Ser. No. 34,648
Int. Cl.[3] F23N *5/20*
U.S. Cl. 236—46 R **10 Claims**



1. A pneumatic system for controlling the start-up time of a thermal conditioning system for an enclosed space in response to a sensed temperature, which comprises:

means for sensing a temperature and for generating in response thereto a pneumatic signal;

a pressure chamber for receiving said pressure signal;

bleed means;

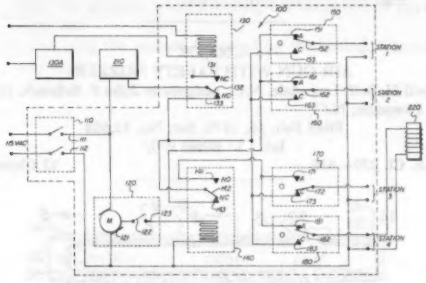
valve means having a first position for providing only a communication between said sensing and generating means and said pressure chamber and a second position providing only a communication between said pressure chamber and said bleed means; and

means for transmitting the pressure of the pressure chamber to start said thermal conditioning system when said pressure drops to a predetermined level after said valve means is actuated into said second position.

4,243,174
METHOD AND APPARATUS FOR CONTROL OF AIR FLOW TO A PLURALITY OF ROOMS

Chris R. Moeller, 211 Axilda, Houston, Tex. 77017, and George L. Slanina, 814 Overland, Stafford, Tex. 77477

Filed Sep. 27, 1979, Ser. No. 79,512
Int. Cl.[3] G05D *23/32*
U.S. Cl. 236—46 R 10 Claims



1. In a system for maintaining and controlling temperature in rooms of a building including

heating and/or cooling means,

a thermostat controlling energization of said heating and/or cooling means in response to temperature in said building,

means, including air ducts, to circulate air from said heating and/or cooling means to said rooms for heating or cooling the same;

an energy economizing system comprising

at least one damper in an air duct controlling air circulation to one of said rooms and biased to a normally open position,

electrically operated actuating means operable upon energization to move said damper to a substantially closed position,

time operated switch means having contacts operatively connected in circuit with said damper actuating means and operable to close said damper at a selected time,

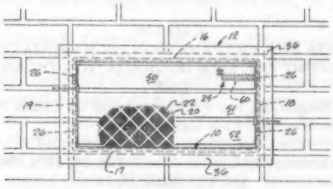
normally open relay switch means positioned in the circuit from said time operated switch means to said damper actuating means and connected for actuation in response to closing of said thermostat, and

said time operated switch means being operable to energize said damper actuating means to close said damper only when said thermostat is closed.

4,243,175
TEMPERATURE REGULATED WALL VENTILATOR CONSTRUCTION

Edward D. McSwain, Rte. 7, Box 325, Lincolnton, N.C. 28092

Filed Aug. 23, 1979, Ser. No. 69,243
Int. Cl.[3] F24F *13/08*
U.S. Cl. 236—49 8 Claims



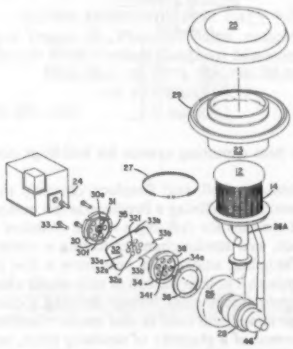
1. An improved temperature regulated wall ventilator comprising a housing having peripheral wall means defining an air flow passageway therethrough, a plurality of louvers, means mounting said louvers in side by side relation in said housing passageway for pivotal movement about their respective individual longitudinal axes to open and close said air flow passageway in response to a predetermined temperature change;

said mounting means including an opening through a peripheral wall portion of said housing, a stub shaft extending through and having a head portion engageable with the inside edge of said housing peripheral wall opening to prevent rotational movement of the stub shaft, said stub shaft extending only partially across said air flow passageway along the pivotal axis of one of said louvers, an elongate bimetallic helical spring located in said air flow passageway in surrounding relation to an inner end portion of said stub shaft; means operatively attaching one end of said helical spring to said stub shaft comprising a transversely disposed, elongate slot extending along an inner end portion of said stub shaft and receiving said one end of said spring for sliding movement therealong while preventing its relative rotational movement about said stub shaft; means attaching the other end of said helical spring directly to said one of said louvers whereby contraction and expansion of said spring about its longitudinal axis in response to temperature changes causes corresponding pivotal movement of said louver about its pivotal axis, means interconnecting said louvers to impart pivotal movement to all of said louvers in response to pivotal movement of said one of said louvers by said spring to open and close said air flow passageway of said ventilating housing; and wherein said spring may be contracted or expanded about its longitudinal axis relative to its point of attachment to said one louver by manual rotation of said stub shaft when partially withdrawn from said air flow passageway with its head portion out of engagement with the inside edge of said wall opening.

4,243,176
SEALING AND AIR/FUEL MIXTURE FLOW METERING PLATE FOR GAS FURNACES

Herbert G. Hays, High Amana, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Continuation-in-part of Ser. No. 902,213, May 2, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,955
Int. Cl.[3] F24H *3/08*
U.S. Cl. 237—7 10 Claims



9. A heat exchange system for heating air within an enclosure, comprising:

a first heat exchanger;

a second heat exchanger located a distance from the first heat exchanger and disposed such that air from the enclosure can be moved through the second heat exchanger and returned to the enclosure;

a burner positioned in the first heat exchanger for supplying heat to the first heat exchanger;

means for circulating a fluid from the first heat exchanger to

the second heat exchanger and back to the first heat exchanger;

means for supplying fuel to the system and terminating in a first plate member;

means for directing a fuel/air mixture to the burner for combustion, said means having a second plate member disposed upstream thereof and facing the first plate member, said first and second plate members having fuel and air apertures formed therein; and,

a planar sealing member having a first aperture aligned with the fuel apertures formed in the plate members for permitting fuel to move from the supply means to the burner and a second aperture aligned with the air apertures formed in the plate members for permitting air to enter the mixture directing means and to mix with the fuel as the fuel moves to the burner, the planar member being disposed between the plate members and acting to meter and to allow mixing of air and fuel, the planar member being mechanically deformable by the plate members to form a seal between said plate members, the planar member being the only seal between the plate members, the planar member further functioning to allow flow of predetermined quantities of air and fuel to the burner.

4,243,177

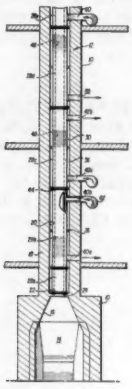
CHIMNEY HEAT CAPTURING SYSTEM

Edgar W. Powers, 1309 Santa Rosa Rd., Richmond, Va. 23229

Filed Dec. 8, 1978, Ser. No. 967,666

Int. Cl.³ F24B 7/00

U.S. Cl. 237—51 **13 Claims**



1. A chimney heat capturing system for buildings comprising:

a fireplace/chimney shell, said fireplace/chimney shell including a means for defining a fireplace at the bottom end thereof and a means for defining a smoke chamber above said fireplace, said smoke chamber having a converging shape for funneling smoke and heat from a fire at said fireplace through a hole in the top of said smoke chamber, said fireplace/chimney shell further defining a chimney-shell passage above said hole in said smoke chamber;

a flue liner formed of a plurality of similarly sized, individual, toroidally-shaped heat exchangers positioned end-to-end inside said chimney shell to form a continuous central channel above said hole for channeling all smoke and heat exiting from said hole, said individual toroidally-shaped heat exchangers each comprising an outer wall, an inner wall and spacers positioned between said outer and inner walls for maintaining a heat-capturing space between said outer and inner walls, each of said toroidally-shaped heat exchangers being constructed as a separate unit but being supported by a lower such unit, with the exception of the bottom unit which is supported by a portion of the fireplace/chimney shell defining the smoke chamber, and by spacers positioned between said outer wall and said chimney-shell passage, said outer wall being significantly smaller than said chimney-shell passage, said units including attaching means on the ends thereof for attaching them to the adjacent units;

a pair of ducts extending from the interior of said building to the outer walls of the units to be in communication with at least one heat-capturing space.

4,243,178

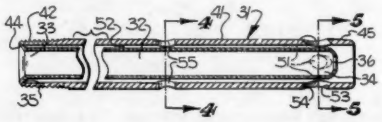
AIR GUN WITH SAFETY NOZZLE

Cecil H. Self, Lawndale, N.C., assignor to John F. Schenck, III, Lawndale, N.C.

Filed Feb. 16, 1979, Ser. No. 12,658

Int. Cl.³ B05B 9/01

U.S. Cl. 239—436 **13 Claims**



1. In an air gun for delivering a directed stream of high pressure air, wherein there is provided a valve body having air inlet means adapted to be connected to a source of pressurized air and for admitting pressurized air to said body and having air outlet means for egress of the pressurized air from said body, a valve carried by said body and being operably disposed between said inlet means and said outlet means, and means mounted on said body for manual actuation of said valve so as to selectively control the flow of pressurized air out of said body, the combination therewith of

an elongate open-ended flow tube supportingly carried by said valve body and extending outwardly therefrom, said flow tube having respective inlet and outlet ends, said inlet end being in communication with said air outlet means for receiving pressurized air therefrom and said outlet end being adapted for emitting pressurized air in a directed stream from said air gun; and

a sleeve mounted in a surrounding relation with respect to said flow tube and having an inlet end and a discharge end extending beyond said outlet end of said flow tube and terminating closely adjacent thereto so as to serve to protect against blockage or stoppage of said outlet end, said sleeve including exhaust means communicating with the interior of said sleeve and closely adjacent the discharge end of the sleeve and remote from the inlet end thereof and also closely adjacent said outlet end of said flow tube so that under normal operating conditions no material reduction in air pressure between said air inlet means and said discharge end is effected, but in the event said discharge end is blocked or obstructed, pressurized air is released through said exhaust means.

4,243,179

PROCESS FOR PREPARATION OF RAW MATERIAL MINIMIZING THE SIZE DEGRADATION OF ANATASE ORE

Gustavo Magalhaes, rua Professor Almei da Cunha No. 196, Belo Horinzonte, Minas Gerais, Brazil

Filed Dec. 20, 1978, Ser. No. 971,267

Claims priority, application Brazil, Jan. 31, 1978, 7800586

Int. Cl.³ B02C 23/14

U.S. Cl. 241—24 **1 Claim**

1. A process for the concentration of anatase ore wherein grain size degradation is minimized comprising:

(1) wet disaggregation of anatase ore in a rotating drum, wherein the percentage of solids is greater than 40%;

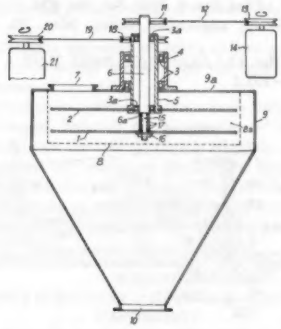
(2) screening and crushing the wet-disaggregated ore to a grain size having a maximum size of about 19 mm;
(3) classification, wherein the percentage of solids is greater than 20%;
(4) screening of the classified product;
(5) magnetic concentration to remove magnetizable minerals;
(6) grinding the non-magnetic fraction to liberate anatase from the gangues while avoiding the formation of ultrafines; and
(7) desliming the anatase followed by thickening, filtering and drying.

4,243,180

CRUSHING DEVICE

Michel G. Bonnel, Comines, France, assignor to Colmant Cuvelier Dodge, Lille, France

Filed Apr. 13, 1978, Ser. No. 896,223
Claims priority, application France, Apr. 14, 1977, 77 11198
Int. Cl.[3] B02C *13/14, 13/20*
U.S. Cl. 241—79.2 **14 Claims**



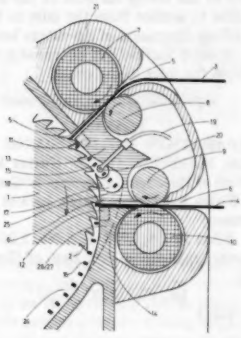
1. A device for crushing particles into a finer size comprising:
means forming a generally vertically disposed chamber, said chamber having an inlet into which the particles to be crushed are loaded and an outlet,
screening means disposed generally horizontally within said chamber between said inlet and outlet and defining a space between said screening means and said inlet, the porosity of said screening means selectively allowing passage therethrough of crushed particles of different sizes,
a plurality of knives disposed generally horizontally and stacked one above the other within said defined space and above said screening means for crushing said particles,
means for rotating at least one of said knives but less than said plurality of knives at a first rotational speed, and
means for rotating at least one of the remaining said knives at a second rotational speed to create relative movement between said at least one knife and said at least one remaining knife the particles within said defined space being subjected to repeated impacts against the knives until reduced to the fineness required to pass through the screening means to the outlet of the device.

4,243,181

GRANULATION OF MATERIALS

Hans H. W. Hench, Grossostheim, Fed. Rep. of Germany, assignor to Automatik Apparate-Machinenbau H. Hench GmbH, Ostring, Fed. Rep. of Germany

Continuation of Ser. No. 801,656, May 31, 1977, abandoned. This application Sep. 1, 1978, Ser. No. 938,793
Claims priority, application Fed. Rep. of Germany, May 31, 1976, 2624415
Int. Cl.[2] B02C *18/22*
U.S. Cl. 241—142 **12 Claims**



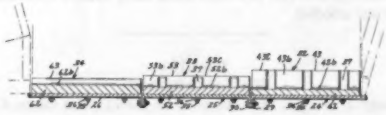
1. Apparatus for granulating materials, which comprises
a rotatable cutter having a cylindrical periphery with cutting blades thereon:
a plurality of separate channels for feeding materials to the cylindrical periphery of said cutter, said channels being angularly offset relative to one another about the cylindrical periphery of said cutter;
and means for limiting the further unwanted cutting of materials cut by said cutter, comprising a separate discharge channel associated with each of the feed channels.

4,243,182

LINER ASSEMBLY FOR BALL MILLS

Charles B. Dugger, Jr., Plymouth, Minn., assignor to Minneapolis Electric Steel Castings Company, Minneapolis, Minn.

Filed Mar. 29, 1979, Ser. No. 25,206
Int. Cl.[3] B02C *17/22*
U.S. Cl. 241—153 **26 Claims**



1. A multiple zone liner system for the cylindrical shell of a ball mill having an inlet at one axial end and an outlet at the other, the liner system comprising:
(a) a plurality of liner sections constructed for mounting on the inner shell surface in sequential relation relative to the

shell rotational axis, each liner section defining a comminution zone;

(b) each liner section formed with a plurality of elevated ridges extending in general alignment with the shell axis and circumferentially spaced therearound to define a comminuting surface;

(c) each ridge defining a lifting surface that is disposed at a predetermined angle relative to a radius of the shell, and each ridge having a predetermined lifting dimension;

(d) the number of rodges of each liner section increasing from section to section from the inlet to the outlet;

(e) the angle of the lifting surfaces of the ridges increasing from section to section from the inlet to the outlet;

(f) and the lifting dimension of the ridges being substantially constant in each section but decreasing from section to section from the inlet to the outlet.

4,243,183

PREPARATION AND CRUSHING TOOL

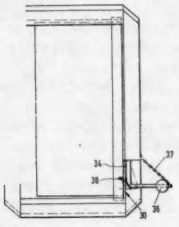
Wilhelm Eirich, Bahnhofstr. 19, and Gustav Eirich, Walldürnerstr. 41, both of Hardheim, Fed. Rep. of Germany, assignors to Wilhelm Eirich and Gustav Eirich, both of Hardheim, Fed. Rep. of Germany

Filed Jan. 4, 1979, Ser. No. 1,322

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806315

Int. Cl.³ B02C *13/02*

U.S. Cl. 241—186.2 **17 Claims**



1. A preparation and crushing device, particularly for refuse materials, having a rotatably driven drum and at least one eccentrically disposed high-speed rotor, whose direction of rotation is opposite to that of the drum, characterised in that the drum **(1)** is driven at a subcritical rotational speed and is provided with a stationary hood **(32)** in which a feed means **(28)** is disposed, that a discharge opening **(30)** is provided in the lower region of the device in the form of a discharge flap **(34)** pivotally mounted on the stationary hood **(32)** and prestressed in the closing direction, which flap is inclined in the flow direction of the material **(6)** and that a plurality of splitting tools **(25)** are mounted on the at least one rotor **(21, 22)** along its rotational axis **(23, 24)**, these tools being spaced apart axially from one another.

4,243,184

CUTTING BOARD

Anthony A. Wright, 1801 Diamond St. #3-113, San Diego, Calif. 92109

Filed Jul. 20, 1979, Ser. No. 59,317

Int. Cl.³ B02C *19/20;* **A47J** *43/25*

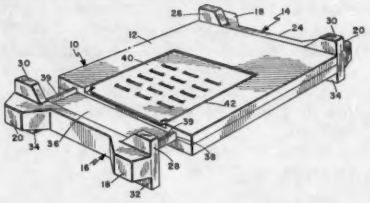
U.S. Cl. 241—273.2 **10 Claims**

1. An extensible sink mounting cutting board comprising in combination:

a cutting board body having a pair of spaced apart generally planar rectangular surfaces,

a first support member fixed to one end of the board for engaging the periphery of a sink for support of the board over the sink and including means for retaining the board in position relative to the sink,

a tray slidably mounted in the other end of the board and including an open side to catch cuttings, and



a second support member on said tray for engaging the periphery of the sink for support of the board.

4,243,185

LOCKING DEVICE FOR SEATBELT SYSTEMS

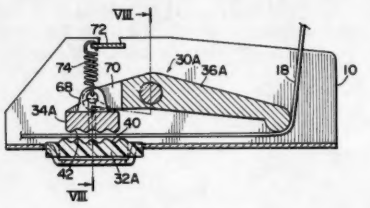
Masanao Motonami; Jun Yasumatsu, both of Toyota, and Yoshio Tsujiuchi, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Kabushiki Kaisha Tokai-Rika-Denki Seisakusho, Nishikasugai, both of, Japan

Filed Jan. 4, 1979, Ser. No. 874

Claims priority, application Japan, Mar. 28, 1978, 53-40618[U]

Int. Cl.³ A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.2 **9 Claims**



1. A locking device for a seatbelt system comprising:

a fixed base having a wavy surface;

a locking part having a wavy surface adjacent to said fixed base which under ordinary conditions is separated from the fixed base so that a passsenger-restraining seatbelt is allowed to pass freely between the locking part and the fixed base, said wavy surfaces of said fixed base and said locking part cooperating such that when said wavy surfaces approach each other, the seatbelt passing between said wavy surfaces is formed into a wavy shape to thereby clamp the seatbelt between said locking part and the fixed base when said locking part approaches said fixed base;

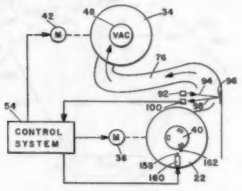
an arm, one end of which contacts the seatbelt and which causes the locking part to approach the fixed base when the tension on the seatbelt exceeds a given value; and

a coupling device which is installed between the arm and locking part and which will allow the locking part to rotate about a major axis of the seatbelt whereby the locking part is caused to press the seatbelt against the fixed base across the entire width of said seatbelt, said coupling device comprising a biasing means for biasing said locking part into contact with said arm.

4,243,186
LOW PROFILE MAGNETIC TAPE DRIVE WITH VACUUM ACTUATED AUTO-THREADING

Jack Peter, La Jolla; Karl B. Offerman, San Diego; Larry D. Brown, Del Mar, and Derek J. Stone, San Diego, all of Calif., assignors to Cipher Data Products, Incorporated, San Diego, Calif.

Filed Sep. 25, 1979, Ser. No. 78,845
Int. Cl.³ G03B *1/04*; G11B *15/32*
U.S. Cl. 242—195 **10 Claims**



1. An auto-threading low profile magnetic tape drive comprising:

a housing having a substantially horizontal base;

means for supporting a supply reel above the base for rotation about a substantially vertical axis, the supply reel having a length of magnetic tape wound thereabout terminating in a free end portion;

means for supporting a take-up reel above the base for rotation about a substantially vertical axis;

drive means mounted below the base and operatively coupled to the supporting means for selectively rotating the reels;

a tape utilization assembly including at least a tape reading head, the assembly mounted on the base between the peripheries of the reels;

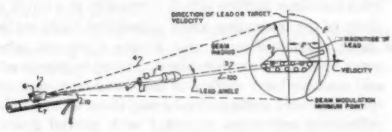
channel means for defining a substantially airtight continuous flowpath between the peripheries of the reels and extending past the tape utilization assembly; and

vacuum means for sucking air through the flowpath to pull and guide the free end portion of the tape from the supply reel to the take-up reel as the supply reel is rotated by the drive means to unwind the tape therefrom.

4,243,187
MISSILE DIRECTOR WITH BEAM AXIS SHIFT CAPABILITY

Andrew T. Esker, St. Louis County, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed May 1, 1978, Ser. No. 901,501
Int. Cl.² F41G *7/14*
U.S. Cl. 244—3.13 **15 Claims**

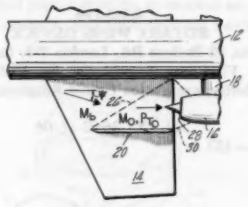


1. In a guidance system for providing guidance information to a missile for directing the missile toward a target, including means for projecting a binary coded beam of electromagnetic energy along an axis, reticle means mounted for rotation with respect to said beam so that all beam energy transmitted from said projecting means passes through said reticle, means for orbitally rotating said reticle about said beam axis, the improvement comprising means for cyclicly varying the speed of reticle orbital rotation based upon movement of said projecting means to advance the apparent beam center at said missile an amount proportional to the rate of movement of said projecting means.

4,243,188
PRECOMPRESSION FIN FOR AXISYMMETRIC INLET ON WINGED HIGH SPEED VEHICLES

Raymond L. DeBlois, Tolland, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 2, 1978, Ser. No. 930,467
Int. Cl.² B64D *27/20*
U.S. Cl. 244—53 B **3 Claims**

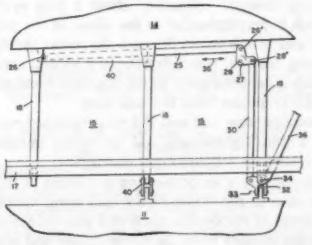


1. For a high speed, winged missile having a pair of side mounted axisymmetric inlets having a forward facing opening for leading air to an air breathing power plant, each of said inlets being axially spaced from the trailing edge of each of the wings of said missile and disposed relative to the airstream so as to be at substantially zero flow angularity in the horizontal plane, means for subjecting said inlets to zero flow angularity in the vertical plane, said means including a pair of fins, each fin extending vertically from the undersurface of one of the wings and spaced outboard from one of the inlets so as to form a precompression member and being aligned parallel to the center line of said missile, said precompression member having a trailing edge spaced forwardly of said forward facing opening.

4,243,189
TEMPERATURE STABILIZED LINKAGE

George Y. Ohgi, Mercer Island, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 18, 1978, Ser. No. 970,724
Int. Cl.³ B64C *9/02*, *19/00*
U.S. Cl. 244—75 R **7 Claims**



1. In an aircraft of the type having a stabilizer and an elevator following the trailing edge of the stabilizer, the stabilizer and elevator consisting of materials having substantially different coefficients of expansion, a passive linkage for interconnecting the stabilizer and elevator, said linkage comprising:

(a) a strut disposed substantially parallel to the trailing edge of the stabilizer and having one end fixed to the stabilizer;

(b) a bell crank having a fixed pivot point and capable of rotating about said pivot point, said bell crank having two arms, one of said arms being pivoted to the other end of said strut;

(c) a push rod pivoted to the other arm of said bell crank and extending substantially at right angles to the trailing edge of the stabilizer; and

(d) a plurality of hinge means on said elevator for connecting the elevator to the stabilizer and permitting it to swing out of the plane of the stabilizer, an outermost one of said hinge means being pivoted to said push rod, whereby said outermost hinge means moves in the direction of said strut in response to temperature variations causing differential expansion or contraction between the elevator and stabilizer.

4,243,190

ROTARY WING DEVICE

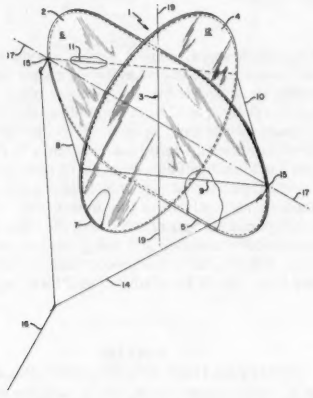
Kenneth Sams, 88 Boileau Rd., London W5, England

Filed Mar. 8, 1979, Ser. No. 18,451

Claims priority, application United Kingdom, Aug. 30, 1978, 34963/78

Int. Cl.[3] **B64C** *31/06*

U.S. Cl. 244—153 A **12 Claims**



1. A rotary wing device having

a flat circular stabilizer disc with a slot along a diameter thereof;

a flat wing member extending through the said slot and having bilateral symmetry about a first symmetry axis which is perpendicular to the plane of the said stabilizer disc and which passes through the center thereof, and also having bilateral symmetry about a second symmetry axis which is perpendicular to the said first symmetry axis and which coincides with the said slot;

said stabilizer disc and said flat wing member each comprising a thin, lightweight rod or tubing peripheral frame covered with a lightweight membrane;

at least one guy wire connecting the frame of the said stabilizer disc to the frame of the said wing member in each quadrant of the device, each said guy wire functioning to transfer stresses from the frame of the said stabilizer disc to the frame of the said flat wing member.

4,243,191

HOODED KITE

John W. Loy, P.O. Box 1281, Bartlesville, Okla. 74003

Filed May 29, 1979, Ser. No. 43,109

Int. Cl.[3] **B64C** *31/06*

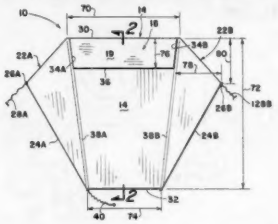
U.S. Cl. 244—153 R **9 Claims**

1. A kite of the soft sled type comprising:

(a) a central canopy of thin flexible sheet material of a generally rectangular shape, the longitudinal side being longer than the width, and having front and rear surfaces, leading and trailing edges;

(b) two slender longitudinal battens, one attached to each side of the central canopy;

(c) a generally trapezoidal flap or hood having a longer base edge thereof secured to and along the leading edge of the canopy, said hood extending downwardly and rearwardly



over a portion of the front surface of the canopy, the ends thereof being attached to the sides of the canopy, the shorter edge opposite the base edge being shorter than the width of the canopy and free of attachment thereto so as to define, in flight, an airspace between said central canopy and said trapezoidal hood which resists collapse of said leading edge; and

(d) cord bridle means secured to the sides of the said canopy.

4,243,192

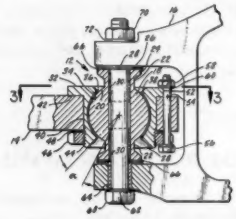
BALL PIVOT THRUST BEARING FLEX JOINT

Robert E. Johnson, Los Alamitos, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Dec. 4, 1978, Ser. No. 966,337

Int. Cl.[3] **B64C** *3/50, 1/00*

U.S. Cl. 244—215 **10 Claims**



1. In an airplane, a flexible joint comprising:

an outer race, said outer race having a concave, truncated spherical inner surface which terminates in a circle at the plane of the truncation and a cylindrical outer surface;

an inner race, said inner race having a convex spherical outer surface is complimentary,, sliding engagement with said concave inner surface of said outer race, said convex spherical outer surface terminating about an axis in lateral cylindrical extensions provided with necked down sections followed by an enlarged flange essentially equal in diameter to the diameter of said circle at the plane of truncation of said spherical inner surface of said inner race and terminating perpendicular to said axis so as to provide rotational clearance for said outer race oblique to said axis while providing an enlarged bearing surface, and with a through bore provided on said axis;

a radial bearing provided in said bore; and

thrust bearing means engaging said enlarged flange ends of said lateral, cylindrical extensions of said inner race whereby rotation about said axis takes place about said

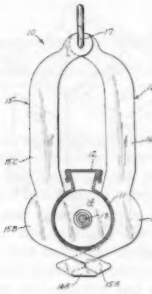
radial and thrust bearings and motion oblique to said axis takes place about said spherical surfaces.

4,243,193

CLAMP

Robert D. Jones, Oskaloosa, Iowa, assignor to Intraco, Inc., Oskaloosa, Iowa

Filed May 18, 1978, Ser. No. 907,119
Int. Cl.³ F16L *3/10*
U.S. Cl. 248—62 **4 Claims**



1. A tube hanger comprising:

a pair of substantially identical sheet members, each of said sheet members including a front side, a back side, an inside edge and an outside edge, the width of the front and back sides being substantially wider than the thickness of said inside and outside edges, each of said members including a lower hook portion, a central tube engaging portion and an upper suspension portion, an opening being disposed in the suspension portion, the hook portions of said members being disposed completely below the tube being hung and being in engagement with each other, each said hook portion comprising a horizontally disposed, substantially V-shaped element having one leg extending from the tube engaging portion to an apex and a second leg extending from the apex downwardly at an angle to said first leg and bent slightly from the plane of the member to facilitate engagement with the other hook portion such that the legs of one hook portion are disposed on opposite front and back sides of the other hook portion, said openings being substantially in alignment, said members including an inside contour on the inside edge thereof and an outside contour on the outside edge thereof, the inside contour of the tube engaging portion conforming substantially to the outside contour of the desired tube to be suspended and said inside and outside contours being substantially identical whereby said sheet members can be cut out from a sheet of material without wasting material between members as they are formed; and

means extending through the openings in said members for connecting said tube hanger to a supporting member and for holding said members together in a tube supporting position.

4,243,194

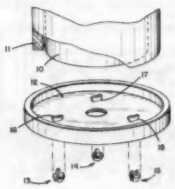
HOT WATER TANK SUPPORTING LEGS

Henry J. Moore, Jr., Los Angeles, and Myron E. Deneau, Malibu, both of Calif., assignors to Mor-Flo Industries, Inc., Santa Monica, Calif.

Filed May 29, 1979, Ser. No. 43,336
Int. Cl.³ F16M *11/20*
U.S. Cl. 248—188.1 **3 Claims**

1. Supporting legs for a hot water tank wherein there is provided a bottom pan for said tank, each of said supporting legs comprising:

(a) a plastic body having a generally tapered cylindrical shape with a circular top surface, said top surface having an integrally formed raised portion in the shape of a T, the cross portion of the T being coextensive with a diameter of said top surface and the stem of the T terminating short of the circular periphery of the top surface by a given distance, the ends of said cross portions of the T having undercut slots each extending radially inwardly a distance at least equal to said given distance, and an upwardly extending integral projection adjacent to a mid part of said cross portion of the T on the side opposite said stem, said bottom pan having openings formed therein, the radius of each opening being less than the radius of said circular top surface of said plastic body by an amount no greater than said given distance, and each opening having diametri-



cally opposite notches extending the opening in a diametric direction a distance at least equal to the diameter of the circular top surface of said plastic body, whereby the upraised cross portion of said T can be inserted upwardly through the bottom of said opening in said pan, the diametrically opposite ends of the cross portion of the T being received in the diametric opposite notches of the opening, and the plastic body then manually rotated to cause diametrically opposite peripheral edges of the opening in the pan to be received in said undercut slots thereby locking the plastic body to the pan, the upward projection and top surface of the T shape serving to receive and index a peripheral edge of a hot water tank relative to the other legs and thereby support the tank in a position insulated from said pan.

4,243,195

SLIDER FOR TRUCK SEAT

Monroe I. Rosenberg, 1777 Briggs Rd., Middleville, Mich. 49333

Filed Sep. 5, 1978, Ser. No. 939,402
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—429 **8 Claims**

8. A vehicle seat suspension, comprising:

frame means having a finite vertical height;

a pair of vertically spaced guide rail means mounted on said frame means, each of said guide rail means being oriented in two vertically spaced planes;

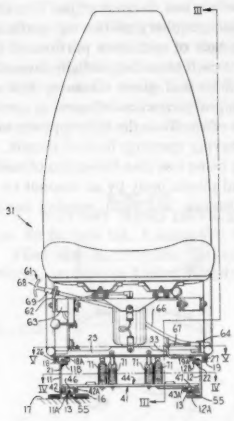
a first base member movably mounted on one of said guide rail means;

a second base member movably mounted on the other of said guide rail means;

locking means for selectively locking said second base member to said frame means;

resilient means resiliently connecting said first and second base members together and resiliently holding said first base member in a centered position relative to said second base member so that when said locking means selectively

locks said second base member to said frame means, said first base member will be movable in both directions along



said one of said guide rail means against the urging of said resilient means; and

a seat mounted on said first base member.

4,243,196

CONSTRUCTION FOR MOUNTING INSIDE REAR VIEW MIRROR IN MOTOR VEHICLE

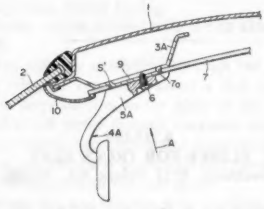
Tadayoshi Toda; Kazuaki Omote, both of Yokohama, and Mamoru Imai, Fujisawa, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 26, 1979, Ser. No. 23,651

Claims priority, application Japan, Apr. 14, 1978, 53-49562[U]

Int. Cl.³ A47F *7/14*

U.S. Cl. 248—475 R **3 Claims**



1. In a vehicle having a passenger compartment,

a first relatively thick ceiling member for the ceiling of said passenger compartment, said first ceiling member being formed with an aperture;

a roof rail having a raised portion with an attachment surface, said raised portion being received in said aperture so that said attachment surface is substantially flush with the inner surface of said first ceiling member;

a mirror mounting bracket having a flat surface attached to said attachment surface, said flat surface being greater in area than said aperture so that said roof rail and said flat surface define a concealed circumferential space around said raised portion,

the arrangement of the foregoing being such that said first ceiling member can be replaced with a second thinner one which is sandwiched between said roof rail and said bracket thus retaining said circumferential space concealed.

4,243,197

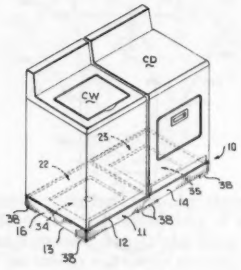
PAD FOR PROTECTING FLOORS AGAINST WATER DAMAGE

Marvin D. Wright, Rte. 2, Box 10, Madisonville, Tenn. 37354

Filed Jun. 25, 1979, Ser. No. 51,546

Int. Cl.³ E04F *15/00*; E04B *5/48*

U.S. Cl. 248—678 **11 Claims**



1. A pad for protecting floors against water damage from washers, dryers or like appliances comprising a generally polygonally contoured peripheral wall having an outer surface and generally coplanar spaced upper and lower inner surfaces, said lower inner surface merging generally normally with a lower generally horizontal surface, a pair of upper generally parallel horizontal surfaces vertically offset from each other, a first of said upper horizontal surfaces being wholly inboard of and surrounded by a second of said upper horizontal surfaces, said second upper horizontal surface being of a squared-off annular configuration as viewed from above, said second upper horizontal surface being disposed generally normal to said upper inner surface, a second innermost peripheral surface disposed generally normal to said first and second upper horizontal surfaces and defining the vertical offset therebetween, said second innermost peripheral surface and said first upper horizontal surface defining an upwardly opening polyognal chamber wherein water is adapted to drain and/or accumulate from an associated washer, dryer or like appliance associated with said pad, said second upper horizontal surface and lower horizontal surface outboard of said second innermost peripheral surface defining a reinforced supporting ledge adapted to support thereon inboard of said upper inner surface the legs of an associated washer, dryer or like appliance, said lower inner surface defining four corners beneath said lower horizontal surface, a reinforcing foot at each of said corners beneath said lower horizontal surface, said upper inner surface completely bounding said ledge, and each foot having a bottom face below said lower horizontal surface.

4,243,198

CONCRETE MOLDING APPARATUS

Angelo V. Beretta, Lincoln, R.I., assignor to Durastone Co., Lincoln, R.I.

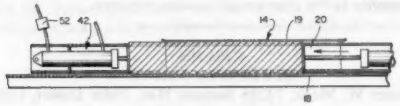
Filed Mar. 27, 1978, Ser. No. 891,128

Int. Cl.³ B28B *7/12*

U.S. Cl. 249—66 R **1 Claim**

1. A molding machine for fabricating concrete members comprising a supporting structure having a discharge end, a mold box supported by said structure, said mold box having upstanding sides, an open top and open ends, a first end plate mounted at the discharge end of said mold box, a second end plate mounted at the other end of said mold box, discharge means for longitudinally forcing said second plate through said mold box is a first direction toward said discharge end so as to discharge a concrete member formed therein, said discharge

means including means for permitting retraction of said first end plate during discharge of said concrete member while simultaneously maintaining said first end plate in pressurized contact with the discharge end of said concrete member at least during initial stages of the movement of said second plate through said mold box, so as to eliminate end distortion of the discharge end of said member as said member is forced longitudinally from between said mold sides, and means for moving said first end plate to an inoperative position out of contact with said member after predetermined movement of the latter



in said first direction, said discharge means including a hydraulic pump operationally connected to both said plates for simultaneously moving said second plate in a discharge direction and maintaining said first plate in pressurized contact with the discharge end of said member, each of said plates having a hydraulic cylinder operationally associated therewith, the return line of said first end plate hydraulic cylinder having a bleed valve mounted therein for controlling the rate at which said first plate may be retracted and accordingly the rate at which said second plate may be forced through said mold.

4,243,199

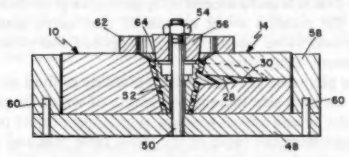
MOLD FOR MOLDING PROPELLERS HAVING TAPERED HUBS

Rodman K. Hill, 2879 Copely Ave., San Diego, Calif. 92116

Filed Dec. 5, 1979, Ser. No. 100,371

Int. Cl.[2] B29C *5/00*

U.S. Cl. 249—142 **6 Claims**



1. A mold for molding propellers having tapered hubs comprising:

a plurality of radially parted mold segments each having two parting surfaces defining two parting lines; and

cavities in said mold segments that define the shape of a propeller having a tapered hub when said mold segments are joined together along their parting surfaces.

4,243,200

FORM PAN STRUCTURE

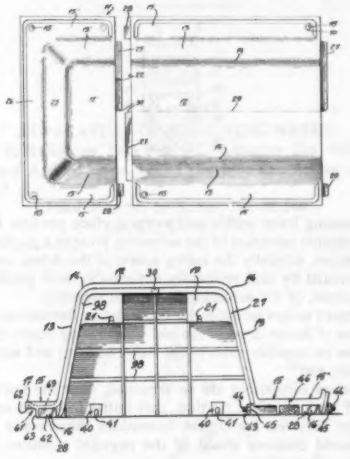
Issie M. Beer; Zenon A. Zielinski, and Henry Finkel, all of Montreal, Canada, assignors to Beer-Zaz Building Systems, Inc., Quebec, Canada

Filed Dec. 16, 1977, Ser. No. 861,571

Int. Cl.[3] B28B *7/28;* **E04G** *11/46*

U.S. Cl. 249—187 R **5 Claims**

1. A re-usable form pan section usable with other form pan sections to define an elongated form pan presenting a smooth continuous molding surface for the full length thereof, said form pan section being constructed of molded plastic material and comprising a top wall, opposed side walls depending angularly outwardly from a respective side edge of said top wall, and a support flange extending outwardly along a bottom free edge of each of said side walls, each of said support flanges including a structural rib-like load supporting bearing section adjacent the respective side wall in underlying relation to a form defining top face, said load supporting bearing sections being capable of freely supporting a vertical load, structural ribs lying in vertical planes formed integral with inner surfaces of said top and side walls and imparting rigidity to said top and side walls to resist vertical and horizontal distortion when said top and side walls are subjected to loads, said form pan section having at least one open end, connecting means adjacent said open end inwardly of said top and side walls for connecting said one open end of said form pan section to a like open end of another form pan section as a longitudinal extension thereof



and in end-to-end abutting relation and with outer surfaces of said top and side walls forming continuations of one another, and alignment means projecting from said open end for interlocking said form pan section with another form pan section in axial alignment therewith, said alignment means including an axial projection on said top wall below the thickness thereof for engagement below the under surface of a top wall of another form pan section and an axial projection on one of said support flanges for engagement within a support flange of another form pan section, said axial projection of said top wall being offset to one side of a longitudinal center of said top wall whereby like axial projections of another form pan section may engage said open end of said form pan section.

4,243,201

DEFLATION VALVE FOR BLOOD PRESSURE MEASURING DEVICE

Blasius Speidel, Hochmeisterstrasse 33, 7455 Jungingen, Fed. Rep. of Germany

Filed Nov. 11, 1977, Ser. No. 850,730

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651553

Int. Cl.[3] F16K *31/00*

U.S. Cl. 251—297 **6 Claims**

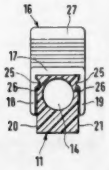
1. In a manually adjustable deflation valve for the controlled release of air from a pressurizable system, such as a blood pressure measuring device, a valve actuating mechanism comprising in combination:

a block-shaped valve housing having two substantially parallel side walls, a longitudinal main axis extending centrally therebetween, and a pivot axis extending perpendicularly thereto;

an actuating lever having a generally U-shaped body profile

constituted by two substantially parallel side wall portions which adjoin a central bridge wall portion and fit over the side walls of the valve housing, at least one of the three wall portions being resiliently deformable in the sense of widening the distance between the distal extremities of the side wall portions, the actuating lever being attached to the valve housing by a pivot connection in its pivot axis, in such a way that the actuating lever straddles the valve housing and its pivotability enables the lever side wall portions to execute a sweeping motion over a surface portion of the side walls of the valve housing with a small lateral clearance therebetween; and

detent means defined between the valve housing and the



actuating lever within said swept surface portion, for the releasable retention of the actuating lever in a pivoted end position, whereby the spring action of the detent means is provided by said resiliently deformable wall portion, or portions, of the actuating lever; and wherein:

the detent means includes duplicate detent formations in the form of detent depressions and cooperating detent protrusions on opposite sides of the valve housing and actuating lever; and

the detent formations are so arranged, near the margin of said swept surface portion, that initial frictional engagement between the detent formations takes place just a minimal distance ahead of the engaged position of the detent formations.

4,243,202

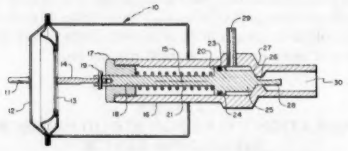
WATER INDUCTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Toshio Inamura, 1740 Kenneth Way, Pasadena, Calif. 91103

Continuation-in-part of Ser. No. 786,109, Apr. 11, 1977, Pat. No. 4,125,092. This application Nov. 2, 1978, Ser. No. 957,422

Int. Cl.³ F16K *31/126*; F02D *19/00*; F16K *47/00*

U.S. Cl. 251—61.4 **6 Claims**



1. A vacuum operated control valve for air-water mixtures comprising a vacuum chamber containing a vacuum responsive diaphragm; a rod interconnecting said diaphragm with a valve needle having a forwardly extending elongated neck, a thickened valve body having a forward portion containing sealing means and a less thick intermediate portion and a rearwardly tapering back portion terminating in a rearwardly extending tail which increases in circumference to a predetermined size; a housing surrounding said valve needle, said housing having a closed forward end through which the elongated neck of the valve needle extends an open rear end and an internally tapered neck defining an exit port which approximates the largest diameter of the valve needle tail, said portion of the housing forward of the tapered neck having the same diameter as the forward portion of the valve body such that the valve body engages the housing in a fluid tight relationship, said tapered neck being adapted to seat the tapered portion of the valve body with the valve needle tail extending through and rearwardly of the exit port; an inlet port in said housing adjacent the intermediate portion of the valve body and forward of the tapered neck; a valve spring surrounding the elongated neck of the valve needle and positioned in the housing between the closed forward end thereof and the valve body such that the valve needle is tensioned in a closed position sealing the exit port from the inlet port in a fluid tight relationship in the absence of vacuum pressure.

4,243,203

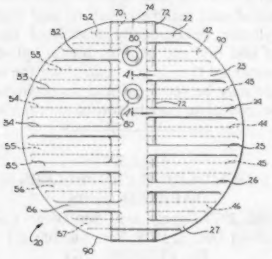
BUTTERFLY VALVE

Lawrence W. Mack, 73285 Bursera Way, Palm Desert, Calif. 92260

Filed Jul. 20, 1979, Ser. No. 59,168

Int. Cl.³ F16K *1/22*

U.S. Cl. 251—305 **2 Claims**



1. In a butterfly valve assembly comprising a valve plate disk having a first side and a second side, said valve plate disk being adapted for rotation about an axis of said valve plate disk whereby said valve assembly may be opened and closed, the improvement comprising:

a valve plate disk provided with a plurality of fluid directing ribs on each side thereof, the length of which lie perpendicular to said axis of rotation, which ribs project perpendicular from the plane of the valve plate disk and which ribs extend only from a location proximate the axis of rotation to a location proximate the edge of said valve plate disk;

wherein the ribs located on one side of said valve plate disk are alternately located on one side of said axis and then the other side of said axis as one proceeds along said axis from one end thereof to the other, each rib being equally spaced from the rib above it and the rib below it, and wherein the ribs located on said second side of said valve plate disk are located opposite the spaces between the ribs located on said first side of said valve plate disk.

4,243,204

VALVE HOUSINGS MADE FROM STEEL, ESPECIALLY FOR GATE VALVES

Walter Siepmann, Warstein-Belecke, Fed. Rep. of Germany, assignor to Forval S.A., Fribourg, Switzerland

Filed Feb. 21, 1979, Ser. No. 13,525

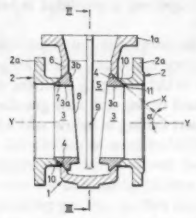
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1978, 2807740

Int. Cl.³ F16K *27/10, 3/00*

U.S. Cl. 251—366 **12 Claims**

1. A steel valve housing comprising a central housing part having an axis and formed in opposite walls thereof with axially aligned openings defined by inner frustoconical surfaces tapering in outward direction at a predetermined angle to the

axis; a pair of connecting sockets axially aligned with said openings of the housing part and having inner end faces which taper at the same angle to the axis of the housing part and in the same direction as said frustoconical openings of the housing part, and with axially extending annular inner surfaces axially aligned with each other and with the openings of the housing part; and a pair of connecting members having each a cross-section substantially in the form of a right-angle triangle connecting said connecting sockets to said central housing part, the hypotenuse of the triangular cross-section of each connecting member forming the generatrix of the frustoconical outer surface inclined at the same angle to the axis of the housing part, the frustoconical outer surface of each of the connecting members having a first portion of its length which extends over



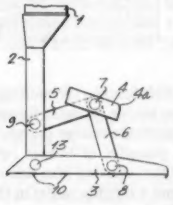
the large diameter region of the frustrum and is welded at said angle over the whole circumference to the inner frustoconical surface of the respective opening of the housing part, the frustoconical outer surface of the connecting member having a second portion of its length which extends over the smaller diameter region of the frustrum and is welded also at said angle over the whole circumference to the inner tapering end face of the respective socket, each of the connecting members having an axially extending inner annular surface formed by one of the sides of the triangle and forming the continuation of the inner annular surface of the respective socket, each of the connecting members having a transversely extending further annular surface formed by the other side of the triangle and located within the housing part so as to face a central plane of symmetry of the latter.

4,243,205

LOG BREAKING DEVICE

Victor A. Dushku, Rackarbergsgatan 34, 2 TR., 752 32 Upsala, Sweden

Filed Sep. 12, 1979, Ser. No. 74,745
Int. Cl.³ B66F *15/00*
U.S. Cl. 254—113 **13 Claims**



1. A manually operated mechanical log breaking device comprising

a longitudinally extending lever means;

a first pressure plate extending from one end portion of said lever means;

a second pressure plate pivotally coupled to said first pressure plate and having means on one surface thereof for engaging a saw cut in a log;

at least one pressure member having means for engaging a saw cut; and

a link system interconnecting said pressure member and said first and second pressure plates with said pressure member spaced from said first and second pressure plates, said link system comprising

an axle, and

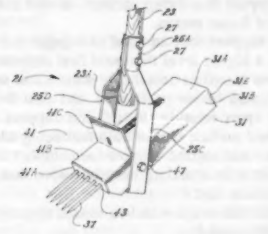
at least two lever members, said pressure member and one end of each of said lever members being pivotally coupled directly to said axle, the other end of each of said lever members being pivotally coupled to said first and second pressure plates, respectively.

4,243,206

APPARATUS FOR REMOVING WEEDS

Verner E. Heikkinen, 2021 Holt Rd., Arlington, Tex. 76011, and Edward A. Heikkinen, 1217 Columbine Ct., Arlington, Tex. 76013

Filed May 11, 1979, Ser. No. 38,344
Int. Cl.³ B66F *3/00*
U.S. Cl. 254—132 **9 Claims**



1. An apparatus for removing plants from the ground, comprising:

handle means adapted to be held by a person,

lever means pivotally coupled to an end portion of said handle means for pivotal movement between first and second positions relative to said handle means,

said lever means having a rear end and a front end,

a plurality of spaced apart tines connected to the front end of said lever means and extending therefrom for insertion into the ground for removing plants from the ground,

clean off means having a plurality of apertures for receiving said plurality of tines respectively,

said clean off means being movable along said tines between a rearward position near said front end of said lever means and a forward position near the front ends of said tines,

when said lever means is in said first position said handle means being out of engagement with said clean off means,

means for urging said clean off means toward said rearward position,

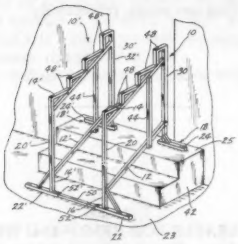
when said lever means is located in said first position, said clean off means is located in said rearward position and said tines extend beyond the end of said end portion of said handle means whereby said tines may be inserted into the ground by applying pressure to said rear end of said lever means with one's foot, said handle means comprising structure adapted to engage said clean off means and move said clean off means to said forward position for removing plants, dirt, etc. from said tines as said handle means is pivoted, relative to said lever means, in a direction to move said structure of said handle means forward.

4,243,207

FREE STANDING PORTABLE STAIRWAY RAILING DEVICE

Lambertus Heykants, Rte. 1, Belmond, Iowa 50421

Filed Nov. 20, 1978, Ser. No. 962,331
Int. Cl.[2] E04H *17/00*
U.S. Cl. 256—64 **12 Claims**



1. A freestanding portable stairway railing device independent of steps or platform and adapted to placed thereon or removed as an independent unit comprising,

a first frame means having forward and rearward ends, and upper and lower portions,

a first support foot adapted to engage a stairway surface, said first support foot being secured to said rearward end of said first frame means,

a second support foot adapted to engage said stairway surface at a higher level than said first support foot,

attachment means to detachably secure said second support foot to said lower portion of said first frame means in spaced apart relation to said first support foot, and the combined surface area of both feet being adequate so that said first and second support feet support said first frame means in a freestanding upright disposition on said stairway surface, and

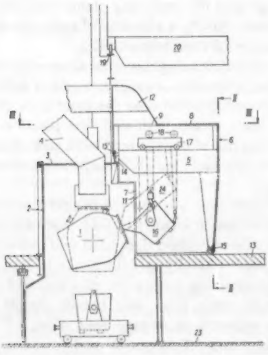
a first hand rail means attached to said upper portion of said frist frame means.

4,243,208

CONVERTER PLANT

Friedrich Laimer, Perg, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed May 17, 1979, Ser. No. 39,750
Claims priority, application Austria, May 24, 1978, 3769/78
Int. Cl.[3] C21C *5/38*
U.S. Cl. 266—158 **5 Claims**



1. In a converter plant of the type including a tiltable converter provided in a hall, a casing surrounding said tiltable converter and having a casing ceiling, a principal discharge conduit for conducting away refining gases connected to said casing ceiling, and a charging device adapted to carry a charging container into a charging position, said casing having a casing part fastened to said charging device and displaceable with said charging device, the improvement which is characterized in that

said charging device is designed as a portal crane displaceable in the direction of the tilting axis of said tiltable converter,

said casing part is designed as a cellular casing part fastened to said portal crane, which cellular casing part has walls open towards said tiltable converter, but otherwise surrounding the portal crane, and has a casing part ceiling,

a gas-discharge opening is provided in said casing part ceiling, and

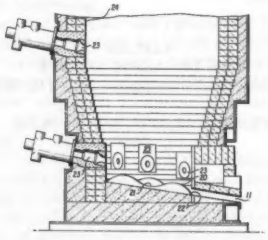
an additional discharge conduit is provided for conducting away secondary emissions, the arrangement being such that, at least in the charging position, said cellular casing part closes said casing and said gas-discharge opening in said casing part ceiling is below said additional discharge conduit.

4,243,209

MULTIPLE LEVEL REFRACTORY HEARTH FOR VERTICAL SHAFT METAL MELTING FURNACES

Ronald L. Pariani, Pensacola, Fla., and David F. Arp, Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Oct. 25, 1979, Ser. No. 88,263
Int. Cl.[3] F27B *1/14*
U.S. Cl. 266—219 **6 Claims**



1. In a vertical shaft furnace for melting and refining pieces of metal, of the type having an outer furnace wall enclosing an upright melting chamber, a charge entrance opening in the top of said furnace, a plurality of burner openings in the inner surface of said wall for injecting heat into said chamber to melt said metal pieces, and a tapping outlet in the bottom portion of said chamber for discharging molten metal from said furnace, the improvement comprising multiple level hearth means for supporting charge which has descended to the bottom of said melting chamber without being melted and

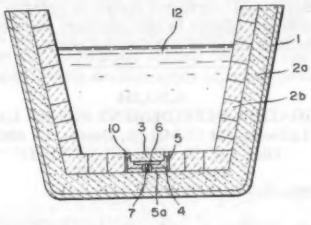
wherein said means comprises a relatively uniform and smooth surfaced multiple level hearth having the shape of multiple domes resting slightly off center in the bottom of said vertical shaft furnace whereby the intersection of said multiple domes and the wall of said furnace is horizontally unlevel so that the point adjacent to said tapping outlet is the lowest level of said multiplel level hearth.

4,243,210

TUNDISH FOR THE CONTINUOUS CASTING OF STEEL

Masaru Takashima, Komae, Japan, assignor to Aikoh Co. Ltd., Tokyo, Japan

Filed May 29, 1979, Ser. No. 42,886
Claims priority, application Japan, Jun. 5, 1978, 53/66635
Int. Cl.³ C21C 5/48
U.S. Cl. 266—220 11 Claims



1. A tundish for the casting of steel including an outer shell having an open upper end and a closed bottom end and a sidewall therebetween for containing molten metal;

a means for introducing gas into molten metal in said tundish positioned on the closed bottom end of said tundish including a generally rectangularly shaped gas permeable refractory molding having an upper and a lower surface with said upper surface being adapted to contact said molten metal, a generally rectangularly shaped gas permeable refractory inner shell engaging said refractory molding in a supporting relationship and having an upper surface and a lower surface with said upper surface being formed so as to provide a cavity between the lower surface of said gas permeable refractory molding and said gas permeable inner shell with said gas permeable inner shell having a permeability which is less than one-fifth that of said gas permeable refractory moulding; and

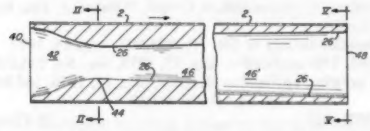
a means for directing gas into said cavity between said gas permeable refractory moulding and said gas permeable inner shell.

4,243,211

TUYERE FOR USE IN REFINING LIQUID METALS

Pierre J. Leroy, St. Germain en Laye; Jean P. Bastien, Saint Priest en Jarez, and Emile J. Sprunck, Moyeuvre, all of France, assignors to Creusot-Loire, Paris, France

Filed Jul. 18, 1979, Ser. No. 58,452
Claims priority, application France, Jul. 19, 1978, 78 21372
Int. Cl.³ C21B 7/16
U.S. Cl. 266—268 12 Claims



1. In a tuyere for use in refining molten metal in a converter, said tuyere having a passage for refining gas and a passage for protective fluid, an improved construction for said refining gas passage comprising:

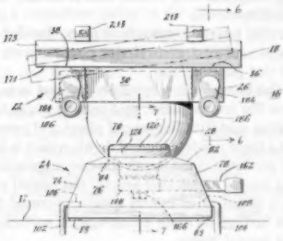
a transverse section having a continuous outer enclosure and a central opening defining a plurality of radially extending branches whose total perimeter exceeds the circumference of a circle having an area equivalent to said central opening.

4,243,212

MEANS FOR RESTRAINING A SWIVEL VISE

Roderick F. Bunyea, Cockeysville, and Robert P. Wagster, Greensboro, both of Md., assignors to Black and Decker Manufacturing Company, Towson, Md.

Filed May 29, 1979, Ser. No. 42,787
Int. Cl.³ B23Q 1/04
U.S. Cl. 269—75 17 Claims



1. An improved vise comprising:

a. first and second workpiece gripping members;

b. means supporting said members for relative movement therebetween in a plane for gripping a workpiece;

c. said support means including a hollow, bowl shaped body member formed of a polymer plastic and having a lower section thereof;

d. said bowl member having three mutually perpendicular axes of rotation;

e. said lower section having a spherically curved wall segment and an aperture formed in said wall segment;

f. a base support body formed of a polymer plastic and having a cavity formed therein;

g. said cavity having a surface configuration which conforms in part with said spherical wall segment;

h. said spherical wall segment positioned in said cavity in sliding engagement with said cavity surface for enabling sliding motion and rotation of said bowl body in said cavity about each of said axes;

i. said bowl body having an interior thereof which is unobstructed between a location at said gripping member plane and an interior wall surface of said body located adjacent said cavity;

j. means for restraining said bowl body and said cavity at a preselected orientation about said axes;

k. said restraining means including a lock body positioned within said bowl interior at a location adjacent said cavity in sliding engagement with said interior wall surface;

l. said lock body having a spherically shaped segment conforming with said interior wall surface; and,

m. means for selectively applying and releasing a force between said lock body and said cavity surface for respectively inhibiting and enabling sliding motion of said bowl surface in said cavity about said axes.

4,243,213

ADJUSTABLE PRECISION GRINDING AND MACHINIST VISE

Michael T. Georgian, 2554 Capitol, Warren, Mich. 48091

Filed Jan. 18, 1979, Ser. No. 4,546
Int. Cl.³ B23Q 3/04
U.S. Cl. 269—137 26 Claims

1. An adjustable precision machinist vise comprising:

a base having a flat top, a flat parallel bottom opposite said flat top, a first end disposed at one end of said base, a second end disposed laterally opposite said first end, and guide means formed in said top of said base, said guide means comprising:

a first central slot portion with a predetermined width formed in said top of said base said first slot portion fur-

ther extending longitudinally across said flat top and penetrating said top a first predetermined depth from said flat top toward said bottom;

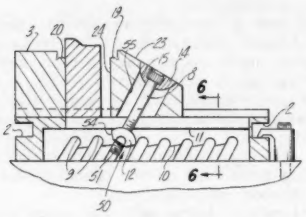
a second central slot portion centrally located with said first central slot, said second slot portion further being wider than said predetermined width of said first portion and penetrating a second predetermined depth from said bottom toward said top of said base to intersect said first central slot portion, said second slot portion further extending longitudinally in said base coaxially with said first central slot;

a first parallel lateral longitudinal plane formed at the intersection of said first central slot portion with said second central slot portion; and

a second flat lateral plane centrally located in said base with said first flat lateral plane, said second plane further being wider than said first flat lateral plane and penetrating said bottom a third predetermined depth which is less than said second predetermined depth for communication with said first flat lateral plane, said second flat lateral plane further having a plurality of lateral notches formed therein, said notches further forming a corrugated surface in said second flat lateral plane;

a stationary jaw fixedly mounted on said top of said base and adjacent to said first end of said base, said stationary jaw having a flat face perpendicular to said flat top and said flat face further being disposed facing said second end;

a movable jaw mounted on said top of said base and spanning said first slot, said movable jaw having an opposing flat surface disposed opposite to said flat face for cooperation with said flat face of said stationary jaw, an inclined shoulder on the top of said movable jaw slanting down from said opposing flat surface toward said second end of said base, a semi-cylindrical hollow surface formed laterally in said shoulder and an angling slot formed in said hollow surface, said angling slot further being inclined relative to said opposing flat surface and directed toward said first end through said movable jaw;



a swivel clamp mounted to said movable jaw, said clamp having a flat side and an arcuate side opposite said flat side for cooperative engagement with said semi-cylindrical hollow surface, said clamp further having a hole formed through said clamp and extending from said flat side through said arcuate side for communication with said angling slot in said movable jaw, said clamp further having a bore counterbored about said hole in said flat side;

a guide element mounted adjacent to said first flat lateral parallel plane, said guide element having a wedge portion, a first flange extending laterally of said wedge portion and a second flange etending laterally of said wedge portion opposite to said first flange, said first and second flanges having upper arcuate surfaces for cooperative engagement with said corrugated surface, said wedge portion having thread means and an upper arcuate surface for clamping engagement against said first flat lateral parallel plane; and

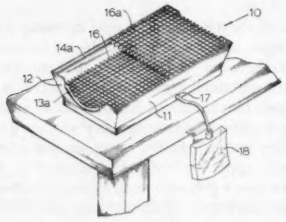
a latching pin disposed through said hole in said swivel clamp, through said angling slot in said movable jaw, through said guide means in said base to threadably engage said thread means in said wedge portion such that when said pin is threadably tightened said first and second flanges are positioned in one of said plurality of notches in said corrugated surface to clamp said upper arcuate surface of said wedge portion against said first flat lateral parallel plane in said base in order to locate said movable jaw on said flat top relative to said stationary jaw along said first slot portion in said top and such that when said pin is threadably loosened, said first and second flanges are adapted to be positioned in another of said plurality of notches in said corrugated surface in order to locate said movable jaw relative to said stationary jaw along the full longitudinal range of said first slot portion.

4,243,214

IRRIGATION-DEBRIDEMENT-REPAIR CADDY

Mary A. LaRooka, 514 Charles St., Geneva, Ill. 60134

Filed Aug. 30, 1979, Ser. No. 71,111
Int. Cl.³ A61G *13/00*
U.S. Cl. 269—327 **11 Claims**



1. An irrigation-debridement-repair tray for extremities of a human body to assist a physician in treating such extremity, comprising:

a rigid tray body having side walls, end walls and a bottom wall, said walls being fluid-impermeable and joined to one another in a fluid-impermeable manner and having an open top;

a plurality of longitudinally extending runner pairs vertically displaced from each other and positioned below a top edge of the side wall of the tray, each runner pair being fixedly attached to the inside of a respective side wall of the tray and extending at least a portion of the length of the tray;

a plurality of operation support surfaces, each positionable on a separate runner pair to receive an extremity of a human body, said surfaces being fluid-permeable; and

an outlet opening at the bottom wall of the tray.

4,243,215

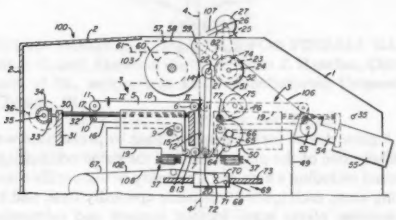
PAPER FOLDING AND CONVEYING APPARATUS AND METHOD

Marc F. S. M. Van den Bergh, Zele, Belgium, assignor to Miller-Johannisberg Druckmaschinen GmbH, Wiesbaden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 824,607, Aug. 15, 1977, abandoned. This application Aug. 17, 1978, Ser. No. 934,624
Claims priority, application Belgium, Sep. 15, 1976, 169.851
Int. Cl.³ B65H *45/20*
U.S. Cl. 493—422 **15 Claims**

1. A paper strip folding and conveying system for zig-zag folding of a continuously flowing strip of paper to produce a stack of overlying folds, such as a series of business forms, comprising: a plurality of longitudinally spaced continuously orbiting first conveying means for conveying and guiding such strip downwardly between respective vertically extending forward conveyor runs toward longitudinally spaced second conveying means; said second conveying means being sets of conveying and folding spirals spaced rearwardly from respective ones of said forward conveyor runs for producing such

overlying folds and simultaneously conveying such strip downwardly; said first conveying means each including a generally horizontally and longitudinally extending transverse conveyor run having a forward end thereof adjacent a lower end of a respective forward conveyor run and extending horizontally therefrom to a rearward end thereof which is adjacent an upper end of a respective second conveying means, said transverse conveyor runs being operable to aid in the conveying and guiding of such strip from said forward conveyor runs to said second conveying means; and adjusting means cooperable with at least one of said first conveying means to selectively adjust the longitudinal spacing between said second conveying means while simultaneously adjusting the longitudinal extent of said transverse conveyor run of said one of said first conveying means an equivalent amount.



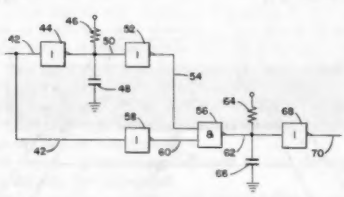
13. In a paper strip folding and conveying system wherein paper strip is alternately directed to a plurality of longitudinally spaced downwardly extending spiral conveying means and wherein the strip is conveyed downwardly by said spiral conveying means and simultaneously folded thereby in an overlapping accordion like fashion, the improvement comprising: said spiral conveying means each include a downwardly extending flight; and cushioning means operative to direct pressurized air to portions of said flight to provide an air cushion intermediate at least some surfaces of said spiral conveying means and adjacent surfaces of such strip which is being conveyed and folded thereby.

4,243,216

DOUBLE DOCUMENT DETECTION SYSTEM

Ali T. Mazumder, Waterloo, Canada, assignor to NCR Canada Ltd. - NCR Canada Ltee, Missisauga, Canada

Filed Jun. 11, 1979, Ser. No. 47,460
Int. Cl.³ B65H *7/06*
U.S. Cl. 271—263 **3 Claims**



2. In a document handling apparatus, means for detecting the passage of double documents along a path comprising a conductive capacitor type sensing device operable for utilizing a document as the dielectric thereof and for generating a signal upon physically detecting a document,
first R-C circuit means for introducing a delay in the generated signal due to the presence of a document,
AND gate means for comparing the generated signal with the delayed signal and generating an output signal,
second R-C circuit means for introducing a capacitive delay in the output signal of said AND gate means to compensate for capacitance other than capacitance due to the presence of two or more documents,
and means receiving said delayed output signal from said AND gate means for generating a double document signal when said delayed output signal indicates that more than one document is detected by said sensing device.

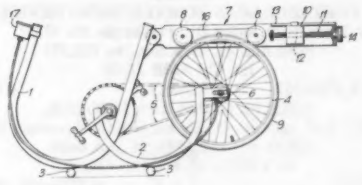
3. A method of detecting double documents comprising the steps of:
generating a signal upon physically detecting a document,
introducing a capacitive delay in the generated signal due to presence of one or more documents,
inverting the generated signal delayed due to presence of more than one document,
comparing the generated signal with the delayed signal to generate and output signal,
introducing a capacitive delay in the output signal to compensate for capacitance other than capacitance due to the presence of two or more documents, and
generating a double document signal when the delayed output signal indicates that more than one document is detected.

4,243,217

EXERCISING APPARATUS

David J. Gibbs, 6, Linden Close, Green Park, Wootton Bassett, Swindon, Wiltshire, England

Filed Apr. 13, 1978, Ser. No. 896,336
Int. Cl.³ A63B *69/16*
U.S. Cl. 272—73 **5 Claims**



1. A cycling exerciser comprising a frame, a wheel rotatably mounted in the frame, a pedal-operated chain drive mechanism for the wheel, a lever pivotally mounted on the frame above the axis of rotation of the wheel, a sub-frame pivotally mounted at its center on the lever directly above the axis of the wheel, two rollers rotatably mounted one at each end of the sub-frame, a weight mounted on the lever to bias the two rollers into engagement with the periphery of the wheel at positions above the axis of the wheel which are equiangularly spaced from the uppermost point of the wheel, and means for moving the weight along the lever for adjustment of the bias.

4,243,218

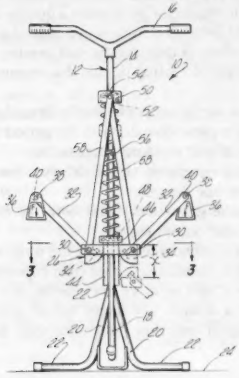
HOPPING VEHICLE

Egas J. DeSousa, 6152 E. Knoll, Flint, Mich. 48507

Filed Feb. 21, 1979, Ser. No. 13,459
Int. Cl.³ A63B *25/08*
U.S. Cl. 272—114 **10 Claims**

1. A hopping vehicle comprising an elongated frame having a lower end adapted to engage a ground support surface;
a carriage means longitudinally slidably mounted to the frame;
resilient means for urging said carriage means toward an upper end of said frame; and
manually powered mechanical advantage means operable on each hop of the vehicle for moving said carriage means

toward the lower end of the said frame and thereby compressing said resilient means with a force greater than the momentum of a rider on the vehicle directly applied to said resilient means.



4,243,219

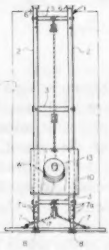
PORTABLE LEAN-TO EXERCISING DEVICE

Paul J. Price, 1420 Junior Dr., Pittsburgh, Pa. 15227

Filed Aug. 11, 1978, Ser. No. 932,771

Int. Cl.[3] A63B *21/06*

U.S. Cl. 272—117 **6 Claims**



1. A portable exercising device comprising a rectangular frame, which has side frame members, and which is adapted to be leaned and inclined against a door frame and being of greater length than the height of said frame, said rectangular frame being devoid of attaching means either to a wall or floor of a building, said rectangular frame having a weight carrying carriage mounted thereon which is guided along the frame by the inclined side frame members, a line attached at one end to said carriage, a pulley secured at the top portion of said rectangular frame about which said line is entrained, pulley means connected to the intermediate portion of said rectangular frame to enable the intermediate portion of said line to extend at selective heights through the opening of said door frame and substantially at right angles to said rectangular frame, the other end of the line being detachably secured to a sports item held by a user which may be swung forwardly under resistance of the weight of said carriage, whereby a pulling force is applied to said rectangular frame in the direction of said door frame.

4,243,220

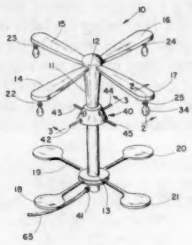
WATER BALLOON GAME

Carlton E. Shelley, R.R. 2, Crawfordsville, Ind. 47933

Filed Dec. 11, 1978, Ser. No. 967,903

Int. Cl.[2] A63F *9/00*

U.S. Cl. 273—1 R **10 Claims**



1. A game device for bursting a balloon by pressurized water above any one of the players playing the game comprising:

a stand including a base and a plurality of outwardly extending arms, each spaced a distance upwardly from said base defining player areas located beneath and substantially vertically aligned with each of said arms;

a water inlet connection on said stand connectible to a source of pressurized water;

a plurality of water outlets each located on a separate one of said arms and having surfaces to which balloons may be mounted above said player areas to receive pressurized water, said stand including passageways leading from said outlets toward said water inlet connections; and

valve means on said stand and operably disposed between said water inlet connection and said outlets to controllably direct pressurized water through said passageways and burst at least one of said balloons.

4,243,221

TRAINING DEVICE FOR PRACTICING THE SERVICE IN TENNIS

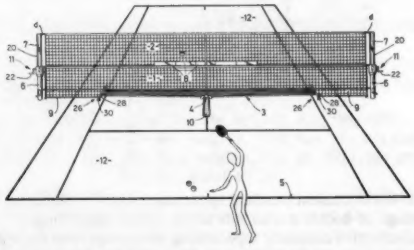
Manuel Ferreira-Godinho, Sedanstrasse 5, D 3250 Hameln 1, Fed. Rep. of Germany

Continuation of Ser. No. 826,922, Aug. 22, 1977, abandoned. This application Feb. 7, 1979, Ser. No. 9,851

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1976, 2638037

Int. Cl.[3] A63B *29/38*

U.S. Cl. 273—29 A **11 Claims**



1. A device for practicing the serve in tennis and for playing tennis, said device comprising:

a pair of spaced, vertical net posts;

a tennis net extending between said net posts and positioned for playing tennis in a normal fashion;

a pair of side posts, one side post being attached to and extending above each of said net posts;

means interconnecting said side posts to said net posts for raising and lowering said side posts relative to said net posts;

a service practice net having an upper longitudinal edge and a lower longitudinal edge, said service practice net being secured to the upper edge of said tennis net along its lower longitudinal edge; and

raising means supported on said side posts and operatively connected to said service practice net for raising said practice net from a first position at which tennis may be played with said tennis net to a second position extending between said side posts at which said service practice net extends above and in the same general plane as said tennis net and is positioned for practice of the serve.

4,243,222

SEESAW TARGETS APPARATUS FOR PINBALL GAME

Irwin J. Grabel, Elmwood Park, and Peter J. Hanchar, Chicago, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

Filed Mar. 23, 1979, Ser. No. 23,083
Int. Cl.³ A63F *7/06*
U.S. Cl. 273—127 R **8 Claims**

1. An alternate target apparatus for use in a pinball game having a playfield and at least one ball movable on the playfield, said apparatus comprising:

a pair of spaced apart targets, each of which can extend through openings in said playfield and be struck by the ball moving on the playfield;

linkage means supporting each of said targets;

said linkage means being operatively connected to said targets so that one target has portions thereof exposed through one of said openings in position to be struck by said at least one ball moving on the playfield when the other target is hidden below said playfield out of the path of said at least one ball moving on said playfield, said linkage means being adapted to simultaneously move both targets between the exposed and hidden positions;

means for shifting said linkage means in response to being driven by a motor means;

motor means operatively connected to said shifting means for driving the same; and

control means for activating said motor means in response to said exposed target being struck.

4,243,223

SPINNER APPARATUS

Niel Ver Hoef, 300 Pioneer Rd., Des Mones, Iowa 50315, and Donald D. Kurth, 4121-75th St., Des Moines, Iowa 50322

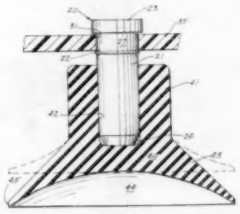
Filed Feb. 15, 1979, Ser. No. 12,352
Int. Cl.³ A63B *71/06*
U.S. Cl. 273—141 R **5 Claims**

1. An improved spinner/indicator device for use on a relatively smooth hard surface comprising:

a rotable apertured spinner element having a pointed forward section and a bifurcated rearward section;

a cylindrical post element having a tapered section on one end, an enlarged cap on the other end, and a resiliently deformable beaded collar portion on its periphery;

a flexible, resilient base member having a conical skirted, lower portion, and an apertured cylindrical upper portion, wherein the diameter of the aperture in the spinner element is greater than the diameter of the cylindrical post, substantially less than the diameter of the enlarged cap, and slightly less than the diameter of the resiliently deformable beaded collar portion around the periphery of the cylindrical post; and



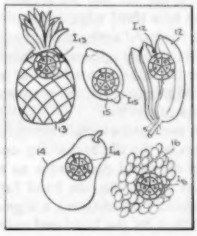
the diameter of the cylindrical post is greater than the diameter of the aperture in the cylindrical upper portion of the resilient base member.

4,243,224

SCRATCH AND SMELL PUZZLE

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Aug. 21, 1979, Ser. No. 68,424
Int. Cl.³ A63F *9/10*; G09B *1/06*
U.S. Cl. 273—157 R **11 Claims**

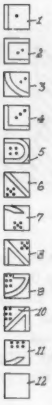


11. A children's game which exploits both the olfactory and visual senses in effecting a match between a playing element and a selected object, said game comprising:

A. a playing board having printed thereon at distinct positions a plurality of pictures of odoriferous objects having characteristic smells, each object having an identifier including a socket; and

B. a group of playing elements corresponding in number to the objects, each element having a surface which exudes a smell simulating the characteristic odor of a respective object, said playing element when inserted in the socket of a selected object having means to indicate whether there is a match or a mismatch between the smell from the element and the characteristic odor of the selected object.

4,243,225
BOARD GAMES
Maxim D. Levinrad, PO Box 7275, Johannesburg, South Africa (2000)
Filed Dec. 6, 1978, Ser. No. 967,104
Claims priority, application South Africa, Dec. 9, 1977, 77/7375
Int. Cl.[3] A63F 3/00
U.S. Cl. 273—272 3 Claims



1. A game comprising a plurality of squares tiles, classified into eleven groups identifiable by the configuration and location of a distinguishable band on the face of the tile namely tiles of

Group 1 wherein the band extends along one edge of the tile;

Group 2 wherein the band extends along three adjacent edges of the tile;

Group 3 wherein the band constitutes an arc between two diagonally opposed corners of the tile;

Group 4 wherein the band extends along two adjacent edges of the tile;

Group 5 wherein the band constitutes a U-shape on the tile with the two legs of the U extending partially along two opposed edges of the tile and the arcuate section of the U forms a tangent to a third edge of the tile;

Group 6 wherein the band extends diagonally across the tile between two diagonally opposed corners thereof;

Group 7 wherein the band extends from one corner of the tile partially along an arc defined between two diagonally opposed corners of the tile;

Group 8 wherein the band extends between two diagonally opposed corners of the tile and along one edge thereof;

Group 9 wherein the band constitutes an arc between two opposed corners of the tile, the band further including a segment substantially constituting a segment of the radius of the arc described by the band and extending along one edge of the tile;

Group 10 wherein the band extends between two diagonally opposed corners of the tile and along one edge thereof, such that the tiles of Group 10 constitute mirror images of tiles of Group 8;

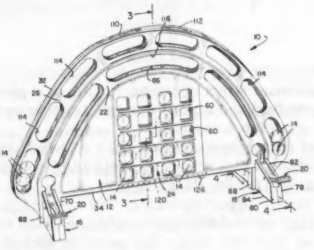
Group 11 wherein the band extends from one corner of the tile partially along an arc defined between two diagonally opposed corners of the tile, such that tiles of type 7 and type 11 are mirror images of one another;

and tiles of Group 12 characterised by tiles having blank faces, each of the tiles reflecting a score value, the tiles being suitable for use in the playing of a game in which players take turns to form letters by correctly combining four tiles from the various groups of tiles set out above and achieve a score in the game according to the values reflected on the combined tiles and adjacently disposed completed letters.

4,243,226
CARD GAME
Roy E. Kendall, Flat 4, 20 Crookham Rd., Fulham, London SW6, England
Filed Mar. 12, 1979, Ser. No. 19,341
Int. Cl.[3] A63F 1/00
U.S. Cl. 273—292 1 Claim

1. A card game comprising a first suit of 15 cards numbered from 1 to 15 and each of which carries a fist distinguishing feature, a second suit of 22 cards numbered from 1 to 15 and containing two of every even numbered card, each card in said second suit carrying a second distinguishing feature, a third suit of 23 cards numbered from 1 to 15 and containing two of every odd numbered card, each card in said third suit carrying a third distinguishing feature and 3 individual wild cards each of which carries a further and different distinguishing feature.

4,243,227
DISC PROJECTING GAME
Ned Strongin, 936 Willow Bend La., Baldwin, N.Y. 11510
Filed Sep. 17, 1979, Ser. No. 76,372
Int. Cl.[3] A63F 9/02
U.S. Cl. 273—357 9 Claims



1. An action toy game conprising

a hollow frame adapted to rest in an upright vertical position on a support surface,

an upwardly-arched arcuate guide channel formed in said frame and extending from one bottom side of the frame to the other bottom side thereof,

a pair of manually-operable actuating levers respectively mounted at each side of said frame at the lower end thereof in communication with the ends of said arcuate guide slot,

a hollow display section formed in said frame at the central portion thereof, beneath said arcuate guide channel, said display section being divided into a plurality of vertical compartments,

the bottom wall of said arcuate guide channel having an elongated gap extending the width of said display section and communicating therewith,

and a plurality of disc-like playing pieces each sized for insertion within said frame to a position within one end of said arcuate guide channel overlying the adjacent actuating lever, said playing pieces being also sized for sliding

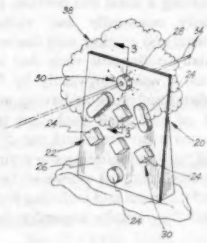
movement within said guide channel, whereby when said actuating lever is depressed, the playing piece is propelled through the guide channel and falls through said gap into one of the vertical components of said display section.

4,243,228

REMOTELY-PERCEPTIBLE IMPACT-INDICATING PROJECTILE TARGET

Joseph Marcella, c/o P.O. Box 18948 Dockweiler Station, Los Angeles, Calif. 90007

Filed Oct. 6, 1978, Ser. No. 949,393
Int. Cl.³ F41J 5/00
U.S. Cl. 273—378 **2 Claims**



1. A remotely-perceptible impact-indicating target for a projectile adapted to remotely-perceptibly indicate at a projectile-shooting location the impact of a shot projectile on a remotely located target in a manner clearly visibly perceptibly indicating the impact location of the projectile against the target, comprising: at least one target element comprising a compact closely-assembled quantity of low density impact-expansible target material responsive to projectile impact in an outwardly expansible explosion-simulating extremely visibly perceptible manner creating a cloudburst effect, whereby said shot projectile impacting any portion of said assembly of target material causes only that portion to effectively expand in an explosion simulating manner outwardly from the point of impact of said shot projectile thereon without substantially affecting the composition of adjacent said portions; and target element mounting means for mounting at least one of said target elements for facilitating the positioning thereof at any desired target range location at any desired degree of remoteness from a person intending to shoot one or more projectiles at said target element, wherein a plurality of said target elements are included and are carried by said target element mounting means in a selected target array and wherein said target element mounting means comprises target-material-containing thin sheet means containing a quantity of said target material in a plurality of selected locations and is further provided with a target base sheet positioned relative to said target-material containing thin sheet means in a manner such as to enclose and confine a desired quantity of said target material therebetween in said plurality of target element locations in said selected target array, said base sheet being cooperable with a target-supporting auxiliary structure.

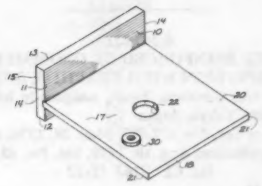
4,243,229

GAME APPARATUS

Melvin Huser, 7400 Dos Rios Way, and Clete Harper, 4124 Granada Ave., both of Bakersfield, Calif. 93309

Filed Jan. 22, 1979, Ser. No. 5,328
Int. Cl.³ A63B 67/06
U.S. Cl. 273—402 **5 Claims**

1. In a game apparatus:
the combination of:
a plurality of circular disks each having a common outer diameter;
and a target comprising:
an upright rectangular backboard having a transverse front vertical surface extending between a bottom edge adapted to rest upon a supporting playing surface and an upwardly facing horizontal top edge, the thickness of the backboard across said top edge being greater than one half the outer diameter of said disks;
a square playing board fixed across the front surface of the backboard and having a planar top surface extending forwardly therefrom to a front edge that is adapted to rest on the supporting playing surface;



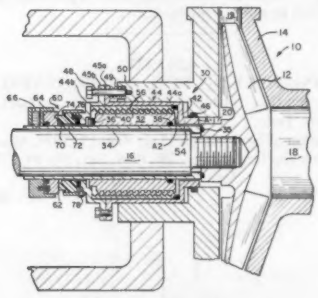
said playing board intersecting the front surface of the backboard intermediate its top and bottom edges, whereby the top surface of the playing board is forwardly inclined when the target is resting on the supporting playing surface;
and a circular target aperture formed through the top surface of said playing board at the center thereof, the inside diameter of said aperture being slightly greater than the outer diameter of said disks so as to freely pass circular disks dropped therein.

4,243,230

LOW ENERGY TANDEM SEAL

Dorsey L. Baker, West Chicago, and Josef Sedy, Glenview, both of Ill., assignors to Crane Packing Co., Morton Groove, Ill.

Filed Oct. 1, 1979, Ser. No. 80,276
Int. Cl.³ F16J 15/34, 15/40
U.S. Cl. 277—3 **20 Claims**



1. A tandem, static-dynamic, low energy seal for sealing the space between a housing and a rotating shaft, said seal comprising:
(a) A first dynamic seal comprising:
(1) An axially moveable pressure responsive collar sealingly mounted on said housing concentrically of said shaft;
(2) Thread pumping ring means interposed between said collar and said shaft for developing fluid pressure opposing leakage of fluid from said housing and for axially moving said collar upon rotation of said shaft and development of fluid pressure;
(b) A second static seal for precluding leakage of fluid from said housing when said shaft is not developing sufficient

pressure for axially moving said collar; said seal comprising:

(1) A first sealing washer sealingly mounted upon said shaft and having a radially extending sealing face;

(2) A second sealing washer sealingly mounted upon said collar, said second washer having a radially extending sealing face opposing the sealing face of said first washer, said washer being in sealing contact when said shaft is stationary and being separated by said pressure responsive collar upon the development of fluid pressure.

4,243,231

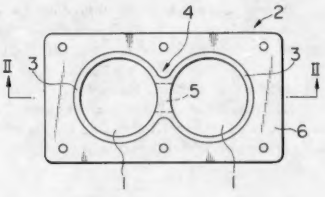
GASKET REINFORCED BY GROMMET IN COMBINATION WITH GRAPHITE SHEET

Minoru Sugawara, Odawara, Japan, assignor to Ishino Gasket Mfg. Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 671,687, Mar. 29, 1976, abandoned. This application Aug. 10, 1979, Ser. No. 65,582

Int. Cl.³ F16J *15/12*

U.S. Cl. 277—22 **4 Claims**



1. A gasket reinforced by grommet in combination with a graphite sheet, comprising:

a gasket base sheet with a plurality of holes and having the area between adjoining holes cut out;

a graphite sheet mounted in said cut out area between the adjoining holes and having a lamellar crystalline structure; and

a grommet mounted on the peripheral edge of said holes and attached to said graphite sheet.

4,243,232

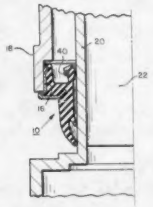
ONE-PIECE OIL SEAL AND BOOT SEAL

James A. Repella, Gastonia, N.C., assignor to Garlock Inc., Longview, Tex.

Continuation of Ser. No. 658,775, Feb. 17, 1976, abandoned. This application Oct. 29, 1979, Ser. No. 89,175

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—37 **16 Claims**



1. Apparatus comprising:

(a) a housing having a bore,

(b) a shaft extending through said bore and adapted for relative movement with respect to said housing;

(c) a seal mounted in said bore for sealing the annular space between said bore and shaft, said seal comprising;

(1) an oil seal portion and a boot sleeve portion integral with said oil seal portion and extending axially outwardly from said oil seal portion;

(2) said oil seal portion including a mounting portion and a sealing element, said mounting portion including an annular metal shell and said sealing element including an elastomeric body portion bonded to said metal shell, said sealing element also including an annular sealing lip in sealing contact with said shaft;

(3) said boot sleeve portion including an elongated, shaft-encircling, elastomeric, tubular sleeve extending axially outwardly from said oil seal portion, said elastomeric sleeve being part of an annular, one-piece, elastomeric body which also includes said elastomeric body portion of said sealing element;

(4) said sleeve having a distal end portion, and said sleeve tapering axially outwardly and radially inwardly toward said distal end portion; said sleeve being flexible and being axially collapsible such that said distal end portion can move axially inwardly by flexing of said sleeve; said distal end portion having an I.D. greater than the I.D. of said shaft such that said distal end portion is spaced away from and out of contact with said distal end portion including the entire end portion of said sleeve including all sleeve surfaces and edges where said surfaces meet and including both the radially outwardly and the radially inwardly facing surfaces thereof;

(5) said seal also including an annular, elastomeric, intermediate dust lip integral with said elastomeric body and extending radially inwardly and axially outwardly from a radially inner surface of said elastomeric body, said intermediate dust lip being separate from said distal end portion and being located axially inwardly therefrom, and the lip of said intermediate dust lip being located closer to the distal end of said distal end portion than to said sealing lip, said intermediate dust lip being in contact with said shaft; and

(6) said elastomeric body also including an annular groove directly radially outwardly of said intermediate dust lip in the radially inner surface of said elastomeric body, said groove extending radially outwardly and axially inwardly up into said elastomeric body, whereby said intermediate dust lip can flex radially outwardly into said groove.

4,243,233

SEAL RING HAVING A TAPERED SURFACE, AND A SEALING DEVICE

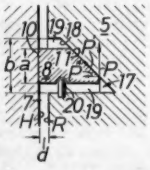
Yoshio Arai, 1-26-26, Koganehara, Matsudo-shi, Chiba-ken,, Japan

Filed Feb. 6, 1979, Ser. No. 9,834

Claims priority, application Japan, Jun. 12, 1978, 53/70519

Int. Cl.³ F01C *19/08*

U.S. Cl. 277—81 P **4 Claims**



1. A sealing device adapted to form a seal between the opposing flat surfaces of a stationary member and a rotary member, said device comprising an annular groove formed in said rotary member and having a conical bottom surface spreading radially outwardly toward the flat surface of said rotary member, an annular seal ring accommodated in said annular groove, said seal ring having a flat sealing face formed

at one end thereof for sealing engagement with said flat surface of said stationary member, and a conical sealing face formed at the other end thereof for sealing engagement with said conical bottom surface of said groove, said seal ring being cut so as to have a radially expanding force, said groove having a radial breadth greater than that of said seal ring, whereby said seal ring is slidable under the action of said radial expanding force along said conical bottom surface of said groove in accordance with a change in the distance between said flat surfaces of said stationary and rotary members or with the increasing wear on said sealing faces of said seal ring to thereby urge at all times said flat and conical sealing faces in intimate sealing contact with the flat surface of said stationary member and the conical bottom surface of said groove of said rotary member, respectively.

4,243,234

SEAL AND SEAL ASSEMBLY

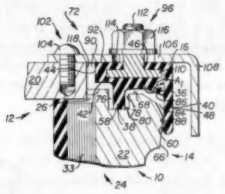
James G. Blahz, Painesville, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US79/00026, § 371 Date Jan. 18, 1979, § 102(e) Date Jan. 18, 1979, PCT Pub. No. WO 80/01505, PCT Pub. Date Jul. 24, 1980

This PCT application filed Jan. 18, 1979, Ser. No. 12,162

Int. Cl.³ F16J *15/32, 15/34*

U.S. Cl. 277—84 **22 Claims**



1. A seal assembly **(10)**, comprising:

a first member **(12)**;

a second member **(14)** having an outer surface **(66)**, a face **(68)** and a central axis **(70)**, said outer surface **(66)** being oriented generally along said central axis **(70)**, said face **(68)** having an annular opening **(76)** and extending inwardly from said outer surface **(66)** in a direction toward said central axis **(70)**, said annular opening **(76)** having sidewalls **(78)** and a bottom surface **(80)**, said first and second members **(12,14)** being rotatable one relative to the other;

first means **(28)** for supporting said first and second members **(12,14)** in rotation one relative to the other;

a body **(36)** having first and second end portions **(50,52)** and a first side **(42)** and being positioned adjacent and about said annular opening **(26)**;

a first leg **(38)** having a sealing surface **(58)** and being connected to the second end portion **(52)** of the body **(36)** and extending outwardly from the first side **(42)** of the body **(36)** into said annular opening **(76)**, said sealing surface **(56)** being in sealing, slidable contact with the face **(68)** of the second member **(14)** in said annular opening **(76)**;

a second leg **(40)** having a sealing surface **(60)** and being connected to the second end portion **(52)** of the body **(36)** and extending outwardly from the first side **(42)** of the body **(36)**, said sealing surface **(60)** being in sealing, slidable contact with the second member **(14)** radially relative to said central axis **(70)** at the outer surface **(66)** of said second member **(14)**; and

second means **(72)** for sealably connecting said body **(36)** to said first member **(12)**.

4,243,235

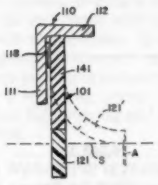
COMPOSITE POLYTETRAFLUOROETHYLENE AND ELASTOMER LIP SEAL

James A. Repella, Southfield, Mich., assignor to The Mather Company, Sylvania, Ohio

Filed Jul. 2, 1979, Ser. No. 54,181

Int. Cl.³ F16J *15/32*

U.S. Cl. 277—152 **11 Claims**



1. A lip seal comprising a substantially uniformly thick annular disc having a polytetrafluoroethylene portion bonded radially concentric to an elastomeric portion, said polytetrafluoroethylene portion being between about 10% and 90% of the radial thickness of said disc, and a rigid concentric annular portion attached to said elastomeric portion of said disc.

4,243,236

SPLIT-JAW LATHE CHUCK WITH ROTARY COUPLING MEMBERS

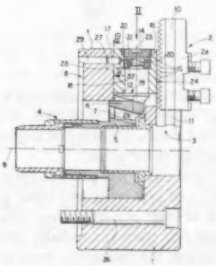
Güp ~ öhm, Heinrich-Röhm-Strasse 50, 7927 Sontheim, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,127

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821910

Int. Cl.³ B23B *31/14*

U.S. Cl. 279—110 **9 Claims**



1. A lathe chuck comprising:

a chuck body rotatable about a chuck axis and formed with a plurality of angularly spaced and radially extending inner guides and with a plurality of angularly spaced and radially extending outer guides;

respective inner jaw parts radially displaceable in said body in said inner guides;

means including at least one operator engageable with said inner jaw parts for radially displacing same in said chuck body in the respective inner guides;

respective outer jaw parts projecting axially forwardly from said chuck body and radially displaceable therein in said outer guides;

respective coupling members between said inner jaw parts and the respective outer jaw parts and displaceable rotationally about respective coupler axes generally radial of said chuck axis between coupling positions engaging both of the respective parts and coupling same together for

joint radial displacement and angularly offset decoupling positions for relative radial displacement of the respective parts; and

means including respective locking elements operatively engageable between said inner jaw parts and said chuck body for blocking radial displacement of said inner jaw parts except when the respective coupling member is in said coupling position.

4,243,237

FORCE-COMPENSATED SPLIT-JAW LATHE CHUCK

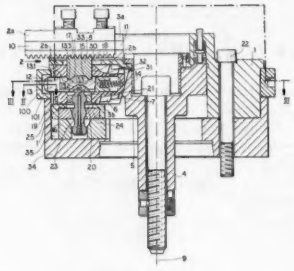
Günter H. Röhm, Heinrich-Röhm-Strasse 50, 7927 Sontheim, Fed. Rep. of Germany

Filed May 18, 1979, Ser. No. 40,128

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1978, 2836191; Oct. 17, 1978, 2845133

Int. Cl.³ B23B *31/14*

U.S. Cl. 279—121 **10 Claims**



1. A lathe chuck comprising:

a chuck body rotatable about a chuck axis and formed with a plurality of angularly spaced and radially extending inner guides and with a plurality of angularly spaced and radially extending outer guides;

respective inner and outer jaw parts radially displaceable in said chuck body in said inner and outer guides;

means including at least one operating element engageable with said inner jaw parts for radially displacing same in said chuck body in the respective inner guides;

respective coupling members axially displaceable in said inner jaw parts and each displaceable between a coupling position engaging the respective outer jaw part and coupling same to the respective inner jaw part for joint radial movement and a decoupling position for relative radial displacement of the respective jaw parts;

respective cams radially displaceable in said inner jaw parts in engagement with the respective coupling members between radially outer positions holding the respective coupling members in said coupling positions and radially inner positions in which the respective coupling members can assume said decoupling positions;

respective springs braced against said cams and urging same radially outwardly into said outer positions; and

a release ring rotatable on said chuck about said axis and formed with at least one radially inwardly extending projection engageable with said cams to move same into said inner positions against the force of the respective springs.

4,243,238

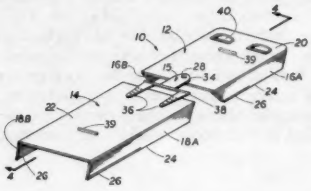
SLED

Marvin L. Johnson, 4236 Bayberry, Louisville, Ky. 40216

Filed Jul. 14, 1978, Ser. No. 924,502

Int. Cl.³ B62B *13/08*

U.S. Cl. 280—20 **9 Claims**



1. A sled comprising

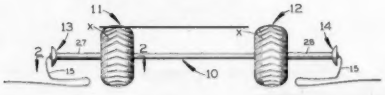
a load supporting forward steerable member,

a load supporting trailing member spaced behind said forward member,

means hingably connecting said forward and trailing members together for turning said members relative to one another in a horizontal plane and for tilting said members relative to one another in a vertical plane,

hand gripping means connected to said forward member for selectively turning and tilting said members relative to one another for respectively altering the direction of movement of said sled for braking the momentum thereof, and

runners formed on opposite side edge portions of said forward and trailing members having bottom surfaces tapered away from a weight supporting surface of each of said members as said surfaces extend from the front to the rear of said runners.



4,243,239

CATAMARAN DOLLY

Russell A. Whitney, 1350 River Reach Dr., Apt. 102, Fort Lauderdale, Fla. 33315

Filed Sep. 29, 1978, Ser. No. 947,267

Int. Cl.³ B60P *3/10;* **F16C** *19/46*

U.S. Cl. 280—47.13 B **12 Claims**

1. In a dolly for a catamaran, said dolly having an axle and a pair of ground wheels having rims spaced apart along said axle, the improvement wherein:

each of said ground wheels has an inflatable, soft-walled, low pressure tire which under the weight of the catamaran is expandable axially at its ground-engaging tread to maintain a load of less than about 2 pounds per square inch on the tire thereat;

and further comprising plastic anti-friction bearings engaged between the axle and each wheel to permit rotation of the axle within the wheels;

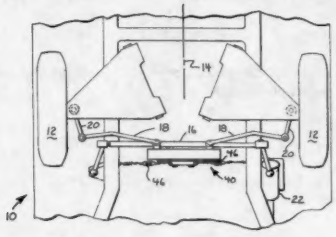
and wherein said anti-friction bearings have metal races comprised of the axle and the rims and are needle bearings of self-lubricating plastic material due to wear and accumulation of plastic on said races.

4,243,240

STEERING STABILIZER FOR MOTOR VEHICLES

William W. Shepherd, Sr., Lithonia, Ga., assignor to International Safety Industries Ltd., Atlanta, Ga.

Filed Aug. 28, 1978, Ser. No. 937,101
Int. Cl.³ B62D *1/00*
U.S. Cl. 280—94 **5 Claims**



1. A steering stabilizer for a motor vehicle having a steerable wheel rotatably mounted to each side of the vehicle centerline and coupled with a steering mechanism, and with the stabilizer comprising, in combination, a housing mounted to the vehicle steering mechanism; a pair of compression springs positioned within said housing; a coupler movably mounted to said housing with a portion of the coupler positioned between and in spring biasing engagement with said compression springs and with said coupler being fastened to the vehicle frame to each side of the vehicle centerline by fastening means that includes a tension spring located at opposite sides of the vehicle centerline.

4,243,241

BICYCLE REFLECTOR AND SPLASH GUARD

Alden B. Davis, 8022 E. Whitton, Scottsdale, Ariz. 85251

Continuation-in-part of Ser. No. 853,288, Nov. 21, 1977, abandoned. This application Sep. 17, 1979, Ser. No. 76,134
Int. Cl.³ B60J *1/68*
U.S. Cl. 280—158.1 **2 Claims**

1. A splash guard for use in a bicycle having a frame and at least one uncovered wheel, comprising:

a. a clamp, having a U-shaped cross-section, for attachment to the frame of said bicycle, said clamp extending from said bicycle frame to form a channel, and having a detent extending into said channel from at least one side thereof;

b. an arm pivotally secured at one end to said clamp for pivotal motion between a guard position supported in and in contact with said channel, and a store position maintained at a substantially right angle to said channel by said detents, said arm pivotal in a plane substantially parallel to the plane of said wheel;

c. said arm including a second end formed into a hook-shaped supporting frame extending in a plane perpendicular to the plane of said wheel, said frame extending over the periphery of said wheel; and

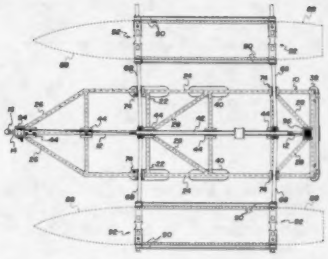
d. a molded reflecting splash guard having a plurality of flexible fingers molded integrally therewith, said splash guard molded in said frame with said fingers extending into contact with the periphery of said wheel when said arm is in said guard position and out of contact with said wheel when said guard is in said store position, said splash guard having a reflecting portion molded in one side thereof to reflect light striking said splash guard when in the store position.

4,243,242

EXPANSIBLE BOAT TRAILER

Gregory D. Waits, 766 Galt Dr., San Diego, Calif. 92021

Filed Apr. 24, 1979, Ser. No. 32,530
Int. Cl.³ B60P *3/10*
U.S. Cl. 280—414 R **8 Claims**



1. A trailer for carrying a vessel having two movable hulls which move from an expanded spaced mode for sailing to a collapsed mode for transport, said trailer comprising:

(a) a rigid vessel support frame mounted on wheels;

(b) a plurality of loadbeam guide pairs longitudinally spaced along and mounted to said frame with the individual guides of each pair being laterally spaced on opposite sides of the longitudinal and centerline of said frame;

(c) a longitudinally extended traveling beam disposed along the centerline of said frame and being mounted to said frame for longitudinal movement;

(d) a plurality of outrigger load beam pairs each comprising a left and right beam and being slidably engaged in said guides and pivoted by their inboard ends at longitudinally spaced positions to said traveling beam;

(e) left and right hull cradle assemblies pivoted respectively to the outer ends of said left and right outrigger beams, whereby a pair of vessel hulls carried in said cradle assemblies can be selectively moved between said expanded mode and said collapsed mode by longitudinal movement of said traveling beam.

4,243,243

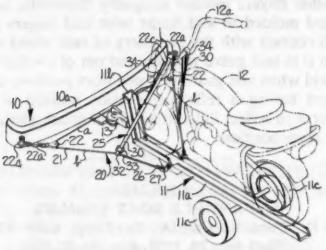
STABILIZING HITCH

John H. Edmisten, P.O. Box 293, Boone, N.C. 28607

Filed Jul. 10, 1979, Ser. No. 56,211
Int. Cl.³ B60D *7/00*
U.S. Cl. 280—446 B **10 Claims**

1. A load stabilizing hitch arrangement for use with a trailer swivelly connected to a towing vehicle and adapted to support a generally upright load; said hitch arrangement comprising an elongate pliable element having opposite end portions adapted

to be detachably connected to a forward lower portion of the trailer, guide means adapted to be mounted on a lower rear portion of the towing vehicle, and being arranged to impart to the pliable element a generally triangular configuration in plan in which the pliable element includes a front run extending generally laterally of the towing vehicle with a pair of opposing substantially horizontal side runs thereof extending rearwardly from said front run and adjacent opposite sides of the

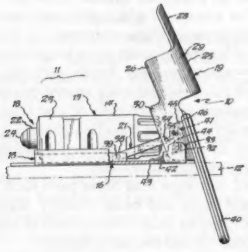


trailer such that said pliable element may move relative to said guide means and the towing vehicle when the towing vehicle is turning while pulling the trailer through a turn, and tie-down means connected to medial portions of the opposing side runs of said pliable element and adapted to be attached to an upper portion of the upright load, to aid in restraining the upright load from tilting sideways on the trailer when pulled through a turn by the towing vehicle.

4,243,244
SKI BRAKE

Douglas L. Replogle, Amherst, N.Y., assignor to Moog Recreational Products, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 9,141, Feb. 5, 1979. This application Jun. 14, 1979, Ser. No. 48,645
Int. Cl.³ A63C 5/00
U.S. Cl. 280—605 **5 Claims**



1. In a resiliently-loaded ski binding wherein a boot assembly is releasably secured to a ski by loading means including a first component engageable with a second component, said ski binding including a slide mount for selectively moving one of said components relative to the other of said components, and wherein said slide mount includes a rail mounted on one of said boot assembly and ski and having a channel aligned with the other of said components, a slide carrying the other of said components and operatively mounted on said rail for movement along said channel relative to said one component, and a lever pivotally mounted on one of said rail and slide and connected to the other of said rail and slide and adapted to be moved between a raised position and a lowered position to move said slide relative to said rail, the improvement which comprises:

a ski brake mounted on said lever and adapted to prevent unintended travel of said ski after said boot assembly has separated therefrom, said ski brake including

at least one link having one marginal end portion pivotally connected to said lever and having another marginal end portion pivotally connected to said other of said rail and slide, the pivotal connection between said link and lever being below the pivotal axis of said lever when said lever is in said lowered position;

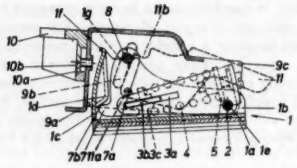
at least one extension mounted on said lever for movement therewith, said extension being configured to extend below said ski when said lever is in said raised position; and

resilient means arranged to urge said lever to move toward said raised position.

4,243,245
SAFETY SKI BINDING

Erwin Krob, Vienna, Austria, assignor to TMC Corporation, Zug, Switzerland

Filed Jan. 5, 1979, Ser. No. 1,363
Claims priority, application Austria, Jan. 5, 1978, 73/78
Int. Cl.³ A63C 9/08
U.S. Cl. 280—626 **19 Claims**



1. In a safety ski binding having a base member having means defining one of a locking projection and recess thereon, sole holder means pivotally supported to said base member for movement about a first pivot axis, support means pivotally supported to said base member for movement about a second pivot axis, said support means including a movable locking part thereon, a locking member and pivotal support means pivotally supporting said locking member on said sole holder means, said locking member having the other of said locking projections and said recess thereon and engaging said one of said locking projection and said recess when said sold holder means is in a position of use, resilient means mounted on and movable with said support means, said resilient means being positioned between and engaging said support means and said locking part to resiliently urge said locking part into engagement with said locking member so that said locking member is also urged by said resilient means into engagement with said one of said locking projection and said recess, one of said locking projection and said recess being maintained in engagement with said other of said locking projection and said recess by the force of said resilient means, and release lever means pivotally supported on said sole holder means for movement between first and second limit positions about a third pivot axis, the improvement comprising wherein said release lever means includes a locking step means, wherein said sole holder means includes means defining an elongated and arcuate slot having a radius whose center is coincident with said first pivot axis, wherein said pivotal support means includes an elongated bolt extending transversely with aspect to the longitudinal axis of said ski and pivotally supporting said locking member, the lateral ends of said bolt being slidingly received in said elongated and arcuate slot means, said locking step means blocking a sliding of said bolt in said slot means when said release lever means is at said first limit to restrict the pivotal movement of said sole holder means so that it will be against the urging of said resilient means and wherein yieldable means are provided for yieldably holding said release lever means at said first limit position, whereby a movement of said release lever means to

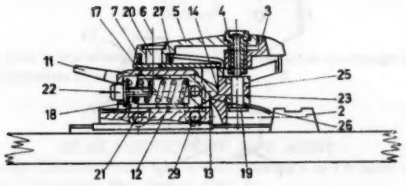
said second limit will remove said locking step means from a blocking relationship with said bolt so that said bolt will slide in said slot means and said sole holder means will be freely pivotal about said first pivot axis.

4,243,246

SAFETY BINDING FOR SKIING BOOTS

Erwin Weigl, Brunn a.Gebirge, Austria, assignor to Polyair Produkt Design GmbH, Kittsee, Austria

Filed Nov. 8, 1978, Ser. No. 958,821
Claims priority, application Austria, Nov. 11, 1977, 8076/77
Int. Cl.³ A63C 9/08
U.S. Cl. 280—628 **7 Claims**



1. A safety binding for skiing boots, comprising a toe holder, a heel holder, a spring-loaded locking member, which is mounted to be displaceable in the direction of its longitudinal axis against a spring force and has a convexly curved head which cooperates with a concavely curved surface of a keeper, which is connected to the heel holder and is pivotally movable relative to the longitudinal axis of the locking member, wherein the concavely curved surface of the keeper has different radii of curvature in a vertical plane and in a horizontal plane and the heel holder is pivoted on a horizontal axis and on a vertical axis, characterized in that the head of the locking member is crowned to conform to the concavely curved surface and has an intermediate portion which in a horizontal plane has a larger radius of curvature and is substantially flat, and that the keeper formed with the concavely curved surface is detachably connected to the heel holder, and that the horizontal and vertical pivotal axes of the heel holder cross each other and are spaced different distances from the forward edge of the heel holder, exceeding the smallest distance from the point of contact between the head of the locking member and the keeper to said forward edge which faces the toe holder or the boot, and the distance from the horizontal pivotal axis of the heel holder to the forward edge of the heel holder exceeds the distance from the vertical axis of the heel holder to said forward edge which faces the toe holder or the boot.

4,243,247

SUSPENSION HEIGHT ADJUSTING MECHANISM IN TORSION-BAR SUSPENSION SYSTEM

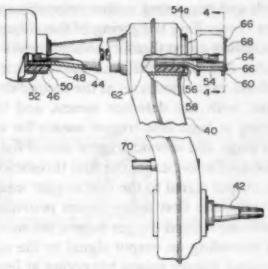
Shunpei Kataoka, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 28, 1978, Ser. No. 973,887
Claims priority, application Japan, Dec. 29, 1977, 52-159504
Int. Cl.² B60G 11/18
U.S. Cl. 280—700 **12 Claims**

1. In a torsion-bar suspension system for a wheeled vehicle including a torque tube rotatably connected at its ends to the body of a vehicle, a suspension arm secured at its one end to the torque tube and rotatably carrying at its other end a road wheel of the vehicle, a bracket secured to the vehicle body and a torsion bar disposed within the torque tube and having one end connected to the torque tube and the other end connected to the bracket, a suspension height adjusting mechanism comprising:

a sleeve member receiving therewithin said other end of the torsion bar and secured to said bracket; and

a hollow adapter member fittingly interposed between said other end of the torsion bar and said sleeve member in such a manner as to be axially movable but prevented



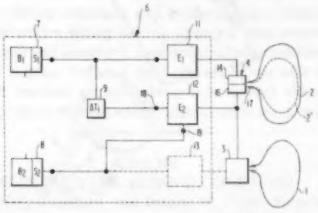
from rotating with respect to both said torsion bar and said sleeve member.

4,243,248

AIR BAG SYSTEM FOR THE PROTECTION OF THE PASSENGERS OF MOTOR VEHICLES IN CASE OF ACCIDENTS

Hansjügen Scholz, Waldenbuch; Hans-Gerd Backhaus, Stuttgart, and Luigi Brambilla, Böblingen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 6, 1978, Ser. No. 949,243
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2745620
Int. Cl.³ B60R 21/08
U.S. Cl. 280—735 **15 Claims**



1. In an airbag system for protecting the occupants of an automative vehicle during collisions, the airbag system including airbags for the driver and front-seat passenger, and a sensor system for detecting the increase in deceleration of the vehicle during a collision and for triggering controlled inflation of the airbags in accordance with the detected increase in deceleration, the airbag associated with the front-seat passenger being inflatable in two stages, the first inflation stage being triggerable in response to an output signal from the sensor system generated when the detected increase in deceleration is one of equal to and greater than a first threshold value, and the second inflation stage being triggerable in response to an output signal from the sensor system generated when the detected increase is one of equal to and greater than a second threshold value which is higher than the first threshold value, the airbag associated with the driver being inflatable only when the second threshold value has been one of equalled and exceeded, the improvement in that the sensor system comprises first delay means for delaying at least the triggering of the second inflation stage with respect to the triggering of the first inflation stage by a first predetermined delay time period, the sensor system further comprising detector means for detecting the increase in deceleration of the vehicle and providing an output indicative thereof, threshold means for comparing the detected

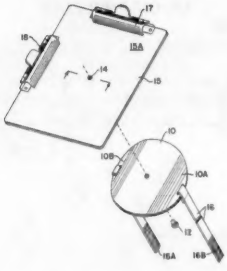
output signal with at least one of the first and second threshold values and providing an output signal when at least one of the first and second threshold values are at least one of equalled and exceeded, and triggering means responsive to the threshold means for controlling triggering of the airbags, the threshold means including a first threshold value means set at the first threshold value and associated with the detector means and a second threshold value means set at the second threshold value and associated with the detector means, and the triggering means including at least first trigger means for triggering the first inflation stage and second trigger means for triggering at least the second inflation stage, the first threshold value means providing an output signal to the first trigger means and to the first delay means, the first delay means providing a delayed output signal to the second trigger means, the second threshold value means providing an output signal to the second trigger means, the second trigger means triggering at least the second inflation stage in response to the delayed signal and the output signal of the second threshold value means.

4,243,249

DOCUMENT HOLDER ASSEMBLY

H. Calvin Goss, 8035 Brittany Pl., Pittsburgh, Pa. 15235

Filed Apr. 20, 1978, Ser. No. 897,974
Int. Cl.³ B42D *17/00*
U.S. Cl. 281—1 **3 Claims**



1. A document holder assembly for use by personnel such as a pilot and navigator on board an aircraft to maintain a log and for access to documents including a flight plan, approach charts or the like, said holder assembly including the combination of:

a support base including bent edge portions at opposite sides each having a strap-receiving opening,

strap means engaging the strap-receiving opening in said support base for attachment thereto for support at a desired location,

a carrier plate having a rigid face surface to support said documents for continuous accessible use by said personnel,

two document clamp members secured to said carrier plate to extend along two adjoining sides thereof to releasably retain individual documents while superimposed on the face surface of the carrier plate whereby lifting of the upper document while retained by one document clamp member exposes an underlying document while retained by the other document clamp member, and

a pivot to interconnect said carrier plate and said support base in a superimposed manner for rotational positioning of documents while retained on the carrier plate by said clamp members relative to said support base.

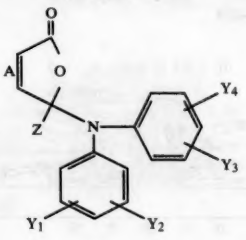
4,243,250

CARBONLESS DUPLICATING SYSTEMS

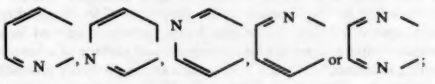
Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 968,082, Dec. 11, 1978, Pat. No. 4,211,872. This application Jun. 14, 1979, Ser. No. 48,534
Int. Cl.³ B41M *5/16, 5/18, 5/22*
U.S. Cl. 282—27.5 **7 Claims**

1. A pressure-sensitive carbonless duplicating system or thermal marking system comprising a support sheet coated with a color-forming compound having the formula

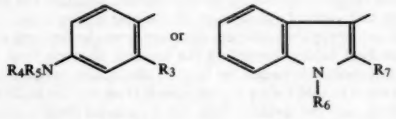


wherein A is



Y_1, Y_2, Y_3 and Y_4 are the same or different and are selected from the group consisting of hydrogen, halo, lower alkoxy, alkyl having from 1 to 9 carbon atoms, phenyl-lower-alkyl and NR_1R_2 where R_1 is hydrogen or lower alkyl and R_2 is hydrogen, lower alkyl, lower alkanoyl, phenylsulfonyl or lower-alkyl-substituted phenylsulfonyl;

Z is



in which:

R_3 is hydrogen, lower alkyl, lower alkoxy, halo or di-lower-alkylamino;

R_4 is lower alkyl;

R_5 is lower-alkyl or benzyl;

R_6 is hydrogen or non-tertiary alkyl having from 1 to 18 carbon atoms; and

R_7 is hydrogen, phenyl or non-tertiary lower alkyl.

4,243,251

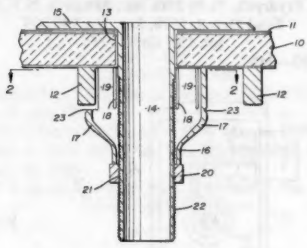
FLOOR OR ROOF DRAIN FITTING

William W. Lindquist, 190 Clarencedale Ave., Youngstown, Ohio 44512

Filed Sep. 28, 1979, Ser. No. 80,077
Int. Cl.³ F16L *5/00*
U.S. Cl. 285—4 **5 Claims**

1. A floor or roof drain fitting comprising a tubular member having a flat outwardly extending annular flange about one end thereof, a sleeve slidably disposed on said fitting in spaced relation to said flange and means on said fitting for urging said sleeve towards said flange in a clamping-like action, said sleeve having an area of enlarged diameter incorporating a plurality

of circumferentially spaced slots arranged in parallel relation to said tubular member, the portions of said sleeve between



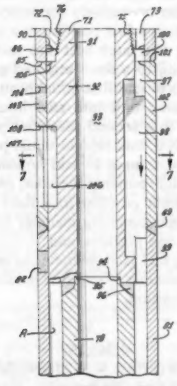
said slots being adapted to be broken away so as to change the configuration of said sleeve.

4,243,252

DUAL CONCENTRIC PIPE JOINT

Gary R. Johnson, Yorba Linda, Calif., assignor to Tri-State Oil Tool Industries, Inc., Bossier City, La.

Division of Ser. No. 854,132, Nov. 23, 1977, Pat. No. 4,187,920.
This application Jan. 18, 1979, Ser. No. 4,410
Int. Cl.³ F16L *55/00*
U.S. Cl. 285—39 **4 Claims**



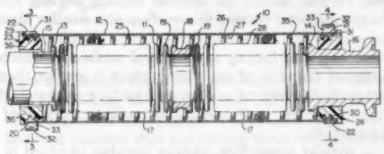
1. Dual concentric drill pipe structure comprising: a pin structure and a box structure; each of said structures including an inner tubular member having a central passage therethrough; an outer tubular member disposed about and connected to the inner tubular member; one of said members of each structure having longitudinal fluid passages therein; said inner member of said pin structure having a threaded pin thereon; the inner member of said box structure having a threaded box receiving said pin; said outer members having transverse shoulders in abutting engagement and with said longitudinal fluid passages in communication with each other; said inner members of said structures providing opposed transversely extended surfaces between said pin and box; sealing means between said transversely extended surfaces to prevent fluid flow between said central passages and said longitudinal fluid passages; and longitudinally extended concentric tubular bodies connected to the respective inner and outer tubular members and forming an annular space communicating with said fluid passages; at least one of said pin and box structures having longitudinally extended, outwardly opening radial slots offset from said longitudinal fluid passages defined by walls on both said inner and outer members for receiving a tool.

4,243,253

FLEXIBLE CONDUIT CONSTRUCTION AND METHOD OF MAKING THE SAME

Arden D. Rogers, Jr., Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Jan. 24, 1979, Ser. No. 6,000
Int. Cl.³ F16L *11/12*
U.S. Cl. 285—45 **11 Claims**



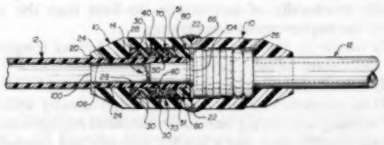
1. In a flexible conduit construction having an inner flexible tubular member and having an outer flexible tubular member telescoped about said inner tubular member with the internal peripheral surface of said outer tubular member in spaced relation from the outer peripheral surface of said inner tubular member throughout the length of said inner tubular member to protect the same, said outer tubular member having opposed ends and being formed of a material that radially expands when said opposed ends are placed under axial compression and that radially contracts when said opposed ends are placed under axial tension, said construction having end members respectively secured to said opposed ends of said outer tubular member, the improvement comprising resilient means disposed about said inner tubular member in spaced relation therewith and engaging said internal peripheral surface of said outer tubular member to hold said internal peripheral surface in spaced relation relative to said outer peripheral surface of said inner tubular member even when said tubular members are in an arcuately flexed condition, said resilient means comprising a coiled compression spring having opposed ends respectively secured to said end members, said outer tubular member being under axial tension between said end members and thereby having said internal peripheral surface thereof disposed in radial compression against said coiled compression spring.

4,243,254

SLIP FIT TYPE TUBING COUPLING

Donald C. Hill, Pasadena, and Robert W. Lyall, Fountain Valley, both of Calif., assignors to R. W. Lyall & Co., Inc., Santa Fe Springs, Calif.

Filed Jan. 2, 1979, Ser. No. 169
Int. Cl.³ F16L *33/18*
U.S. Cl. 285—242 **13 Claims**

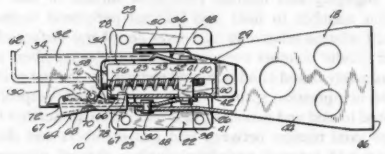


1. A threadless slip fit type coupling for connecting an end portion of a smooth wall tubing to fittings or other tubing, comprising:

(a) a generally cylindrical housing member having an outer insert end for tubing and an inner mounting end, said housing member having a tubing receiving bore through a portion of its outer end and a larger diameter bore extending through the remainder of said housing and opening from said tubing receiving bore to said inner end to define a circular cavity with a generally radially extending rear offset wall,

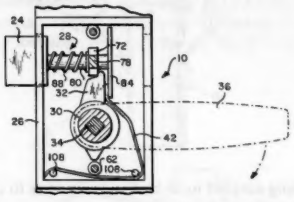
(b) annular seal means disposed in said cavity adjacent said offset wall,
(c) seal spacer means located adjacent said seal means,
(d) at least one annular lock ring means located adjacent said spacer means, said lock ring means having a first radially inwardly extending and concave outer side surface facing said spacer means and a second radially inwardly extending and crowned inner side surface on its opposite side, and further having an internal surface angling from a larger diameter on said first surface to a smaller diameter on said second surface to define a pipe gripping edge, said lock ring also having a peripheral surface in which the external diameter of said first surface is greater than the external diameter of said second surface so that said peripheral surface is disposed at an angle to the wall of said larger bore,
(e) an annular removable retainer member received in said cavity at the inner end of said housing for holding said seal means and lock ring means in place, and
(f) cylindrical stiffener means within said housing to be received in said tubing when tubing is inserted in said coupling housing.

4,243,255
LOW SILHOUETTE ADJUSTABLE LATCH WITH SECONDARY LOCK
Alexander Hornak, Ramsey, N.J., assignor to Rexnord Inc., Milwaukee, Wis.
Filed Apr. 6, 1979, Ser. No. 27,623
Int. Cl.³ E05C 5/02
U.S. Cl. 292—113 **6 Claims**



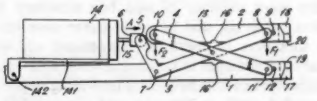
1. In a latch for joining two adjacent members including, an integral base and housing adapted to be secured to one of the members; a handle pivot with its axis transversely disposed and extending through the forward portion of the housing; a handle having a pair of legs attached by their ends to the handle pivot outwardly of the housing and joined rearwardly of the housing by integral side flanges and a top surface to form a channel-like longitudinal opening; a drawhook disposed forwardly of the housing, adapted to engage a catch on the other of the members, and having a pair of rearwardly extending arms each pivotally attached at its end to one of the legs of the handle rearwardly of and nearer the base than the handle pivot; the improvement comprising:
(1) means in the housing permitting limited longitudinal movement of the handle pivot;
(2) an end wall closing the rear of the housing;
(3) an adjustment screw disposed longitudinally within the housing and having one end in threaded engagement with the handle pivot and a headed opposite end journalled in the housing end wall with its head bearing on the outer surface thereof;
(4) means on the head of the adjustment screw engageable externally of the latch by a tool extending through the channel-like opening in the handle on the axis of the screw for turning the same;
(5) locking means on the handle generally disposed and operable in a plane through the axis of the adjustment screw parallel to the base and offset laterally from said axis, said locking means adapted to releasably secure the handle to the housing against rotation thereof about the handle pivot.

4,243,256
NARROW STYLE SURFACE MOUNTED REVERSIBLE LATCH
Robert R. Frydrych, 71-54 58th Rd., Maspeth, N.Y. 11378
Filed Oct. 2, 1978, Ser. No. 948,005
Int. Cl.² E05C 1/16
U.S. Cl. 292—245 **8 Claims**



1. A reversible door latch usable on both right-handed and left-handed doors comprising:
a housing mountable on the exterior of a door, said housing having confronting side walls, each side wall having an opening therein;
a latch member including a latch bolt; means for movably supporting said latch member in either a first initial position in which said latch bolt protrudes through one of said openings or a second initial position in which said latch bolt protrudes through the other of said openings;
a camming member operatively connected to said latch bolt and movable from a first position to a second position for axially moving said latch bolt into said housing through said one opening to a first retracted position when said latch member is in said first initial position and for axially moving said latch bolt into said housing through said other opening to a second retracted position when said latch member is in said second initial position;
a handle rotatably secured to said housing and operatively connected to said camming member, rotation of said handle from an initial position to a final position effecting movement of said camming member from said first position to said second position; and
means for biasing said latch member to said initial position, said camming member to said first position and said handle to said initial position.

4,243,257
GRIPPER MECHANISM
Geoffrey G. Shackleford, Basingstoke, England, assignor to Lansing Bagnall Limited, Hampshire, England
Filed Apr. 5, 1979, Ser. No. 27,602
Claims priority, application United Kingdom, Apr. 4, 1978, 13190/78
Int. Cl.³ B25B 1/00
U.S. Cl. 294—88 **5 Claims**



1. A mechanical robot gripper hand comprising:
(a) an elongate support member defining a first jaw;
(b) a movable member disposed generally parallel to said support member, said movable member including a second jaw in confronting relationship with said first jaw;
(c) means including a parallel movement mechanical linkage for constraining said movable member to move laterally without rotation so as to open and close said jaws;

(d) an actuator having a stroke along said support member; and

(e) means for mechanically coupling said stroke to said linkage for operating said jaws.

4,243,258

TREE HARVESTER

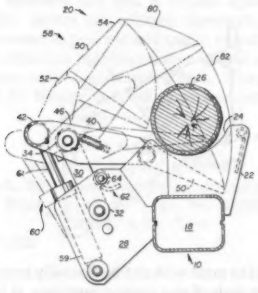
Fred R. Dauwalder, Yorkville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00131, § 371 Date Mar. 5, 1979, § 102(e) Date Mar. 5, 1979, PCT Pub. No. WO 80/01865, PCT Pub. Date Sep. 18, 1980

This PCT application filed Mar. 5, 1979, Ser. No. 38,984

Int. Cl.³ A01G *23/08*

U.S. Cl. 294—88 **9 Claims**



1. A tree accumulating apparatus (**20**) for a multiple tree harvester (**12**) for accumulating trees (**26**) one at a time, said tree harvester (**12**) having a frame (**18**) comprising:

a first member (**30**) having a first end portion (**32**) pivotally connected to the frame (**18**), a second end portion (**34**), and a longitudinal axis (**36**);

a second member (**40**) having first and second end portions (**42,44**), a middle portion (**46**), and a longitudinal axis (**48**), said middle portion (**46**), being pivotally connected to the second end portion (**34**) of the first member (**30**), said second member (**40**) being movable relative to the first member (**30**) between an open position and a closed position;

means (**70**) for holding the second member (**40**) in one of the open and closed positions;

means (**60**) for pivotally moving the second member (**40**) about the second end portion (**34**) of the first member (**30**);

a third member (**50**) having a first end portion (**52**) pivotally connected to the second end portion (**44**) of the second member (**40**), a second, free end portion (**54**), and a longitudinal axis (**56**); and

biasing means (**66**) for urging the third member (**50**) towards a position at which the axes (**48,56**) of the second and third members (**40,50**) form a preselected angle.

4,243,259

PET FECES PICK-UP DEVICE

Ralph J. Wright, Emeryville, Calif., assignor to Rita M. Dixon, Emeryville, Calif.

Filed Feb. 21, 1979, Ser. No. 13,127

Int. Cl.³ A01K *29/00*; A47L *13/52*

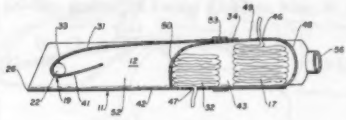
U.S. Cl. 294—1 B **7 Claims**

1. A pet feces pick up device comprising:

a trough-like member having a concave wall and an unobstructed open end attached for insertion into the open end of a pliable disposable bag, said wall being unobstructed at its internal and external sides at said open end and over a length thereof contiguous to said end;

said bag having a length extending over said wall length and a width foldable into conforming shape with said wall to provide an internal lining thereof forming a concave feces-receiving area extending substantially over said wall length; and

means on said member adjacent its said open end for securing a mid-length portion of said bag to said member, said means retaining said mid-length bag portion while said open bag end is engaged and rolled back upon itself to an inverted position thus containing feces deposited on said area internally within said bag.



4,243,260

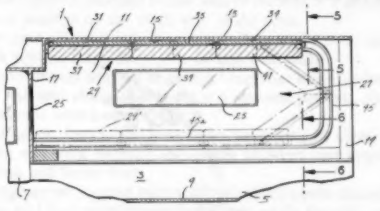
CONVERTIBLE BED FOR PICK-UP TRUCK CAMPER OR THE LIKE

Darrell Giesecking, 119 Scott, St. Louis County, Mo. 63135

Filed Jul. 25, 1979, Ser. No. 60,486

Int. Cl.³ B60P *3/32*

U.S. Cl. 296—24 R **9 Claims**



1. In a vehicle having a compartment including a ceiling and opposite walls, a convertible bed having a plurality of sections in hinged end-to-end relationship, a pair of track members on said walls, guides carried by said bed at the sides of said sections for guiding movement of said sections along said track members, said track members lying in parallel planes and each defining a track having a first reach proximate said ceiling, a lower reach lowered from said ceiling, and a further reach joining said upper and lower reaches, said bed being selectively movable along each track between a storage position proximate said ceiling and a use position lowered from said ceiling.

4,243,261

BODY FOR MOTOR VEHICLES, ESPECIALLY AUTOMOBILES, WITH A SLIDING ROOF HAVING A FRAME BOTTOM

Werner Trenkler, Asperg, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 27, 1979, Ser. No. 15,650

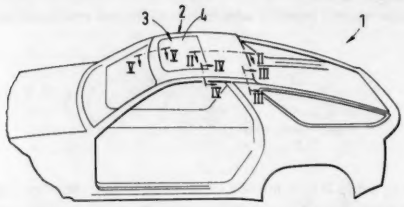
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809379

Int. Cl.³ B60J *7/00*

U.S. Cl. 296—213 **10 Claims**

1. A body for motor vehicles such as automobiles comprising a sliding roof provided with a frame bottom and a supporting structure located below the roof of the vehicle, said supporting structure including transverse and longitudinal supports, wherein said frame bottom is reinforced by at least one indentation and is connected with at least a portion of the transverse and longitudinal supports so as to constitute a rigid

supporting structure, and wherein gutter means are provided which delimit an opening provided in the roof of the vehicle



for the sliding roof, said gutter means connecting said frame bottom and roof of the vehicle together.

4,243,262

REAR WINDOW STRUCTURE FOR AUTOMOBILE

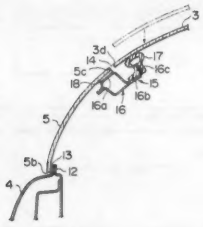
Yasuo Tokunaga, and Kiyoshige Yamada, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Nov. 9, 1978, Ser. No. 959,244

Claims priority, application Japan, Nov. 11, 1977, 52-151786[U]; Nov. 15, 1977, 52-153579[U]

Int. Cl.³ B60J *1/18*

U.S. Cl. 296—146 **3 Claims**



1. Automobile rear window structure comprising rear window opening means formed in an automobile body and having front and rear edges and opposite sides, a pair of rear pillar means extending along said sides of said rear window opening means and respectively having trough sections, transparent means in said window opening means including a rear section and a pair of side sections at the opposite sides of the rear section, said side sections having transverse curvatures which are contiguous with a transverse curvature of said rear section, said rear section being formed separately from said side sections and arranged to cover said opening means with an upper edge hinged to the body at the front edge of the opening means for swinging movement between closed and open positions, said side sections being secured to the body at transversely outside portions of said rear pillar means with said edges located to extend over the rear pillar means so that said rear section and the side sections provide a contiguous contour when the rear section is in the closed position, seal means provided along said trough section of the rear pillar means for providing weathertight seal along the sides of the opening means.

4,243,263

COLLAPSIBLE SUPPORT STRUCTURE AND DEVICES FORMED THEREFROM

Robert Thiboutot, Lac St. Charles, Canada, assignor to Les Entreprises Rotot Ltee, Comte de Bellechasse, Canada

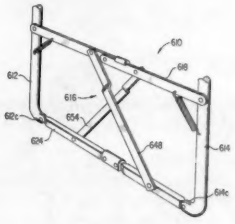
Filed Nov. 13, 1978, Ser. No. 960,436

Int. Cl.³ A47C *4/00*

U.S. Cl. 297—42 **8 Claims**

1. A collapsible support structure for supporting a folding chair comprising two support members interconnected by a collapsible support mechanism, said support members having arcuate shaped lower ends facing each other, said collapsible support mechanism comprising:

first and second collapsible connecting members having first ends pivotally connected to a first of said two support members and second ends pivotally connected to a second of said two support members, a first of said connecting members being formed of two substantially equal length links having ends pivotally interconnected to each other, said first of said connecting members including locking means operative in an erected position of said support structure for maintaining a predetermined angular relationship between said links, the other of said connecting members being formed of a plurality of pivotally interconnected links, outer ends of said other connecting member



being shaped to mate with and be pivotally interconnected to said lower ends of said support members, at least two of the links of said other connecting member having broad, substantially flat lower surfaces for supporting and distributing the weight of said support structure on a surface; and

first and second cross bars extending between and pivotally connected to said first and second connecting members in such manner that said cross bars in an erected position of said support structure form a substantially X-shape and cooperate with said locking means to hold said support members in spaced-apart upstanding positions, said cross bars having off-set portions intermediate their ends to provide clearance between components of said support structure during collapse thereof.

4,243,264

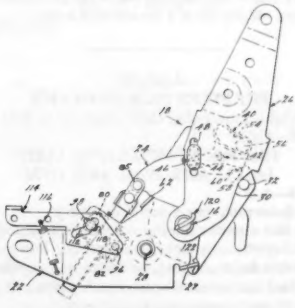
RECLINING SEAT LATCH

Robert L. Bell, Oxford, Mich., assignor to Fisher Corporation, Troy, Mich.

Filed Mar. 12, 1979, Ser. No. 19,377

Int. Cl.³ A47C *1/025*

U.S. Cl. 297—367 **8 Claims**



1. A latch mechanism for controlling rotation of a vehicle

seat back to a reclining position relative to a vehicle seat, said mechanism comprising

a pivot pin joining said seat and seat back for relative rotation,

a quadrant supported by said pivot pin for rotation relative to both said seat and seat back,

stop means on said quadrant for defining the position of said seat back relative to said quadrant, and,

a link extending between said seat and said quadrant for controlling the position of said quadrant, said link being pivotally connected to said quadrant at a point radially spaced from said pivot pin and having spaced teeth on opposite sides thereof,

a pair of spaced latches on said seat having teeth complementary to the teeth of said link, said latches being movable relative to said link to effect engagement and release thereof, whereby said link is locked against movement when said latches are engaged therewith and movable when released to position said quadrant and seat back at a desired rotational position relative to said seat, and

spring means extending between each of said latches and said link for biasing said link away from said latches.

4,243,265

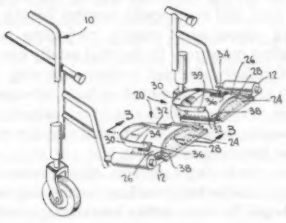
PATIENT CHAIR SLIPPER

Michael Hanik, 220 Summit Hall Rd., Gaithersburg, Md. 20760

Filed Apr. 17, 1979, Ser. No. 30,804

Int. Cl.³ A47C *7/50*

U.S. Cl. 297—423 **15 Claims**



1. An open-ended slipper suitable for attachment to the footplate of a patient chair or similar device, said slipper being capable of protecting a user's foot from chafing or bruising and maintaining the foot in a generally warm, stable and comfortable condition, said slipper comprising:

(a) a generally rectangular base strip having an upper surface and a lower surface, said base strip adapted for placement upon said footplate;

(b) a first layer of soft protective material attached to said base strip upper surface;

(c) a generally rectangular upper strip having an upper surface and a lower surface, said upper strip being attached along two opposed sides to opposed sides of said base strip, said upper strip remaining unattached to said base strip along its remaining opposed sides to create opposed openings between said strips for receiving a user's foot;

(d) a second layer of soft protective material attached to the lower surface of said upper strip adjacent to said first layer of soft material; and

(e) means for attaching said slipper to said footplate and for snugly retaining said slipper upon said footplate, said means being releasably attached to said base strip and comprising a resilient, generally rectangular band attached along two opposed sides thereof to said base strip, said band remaining unattached along its other opposed sides in order to create opposed openings between said base strip and said band so that said band can be stretched over said footplate in order to prevent the slipper from being accidentally displaced from said footplate.

4,243,266

SEAT BELT SYSTEM AND CONNECTOR THEREFOR

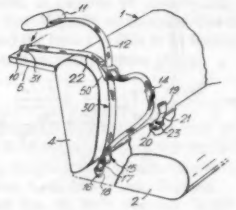
Alexander B. Anderson, Carlisle, England, assignor to Kangol Magnet Limited, Carlisle, England

Filed Feb. 22, 1979, Ser. No. 14,029

Claims priority, application United Kingdom, Mar. 31, 1978, 12730/78

Int. Cl.³ A62B *35/00;* **A47C** *31/00*

U.S. Cl. 297—483 **9 Claims**



1. A safety belt system for restraining an occupant in a vehicle seat having a back portion, said system comprising:

a shoulder belt adapted to extend in use diagonally across the front of the occupant from an upper first position above the occupant's shoulder on one side of the seat to a second lower position on the other side of the seat;

an elongate element extending generally upright over said back portion on said one side of said seat; and

connector means adapted to connect together said shoulder belt and said elongate element at a selected position, said connector means comprising:

spaced upper, central and lower bars, said elongate element being receiving through the spaces between said upper, central and lower bars,

first edge means located outwardly of said elongate element from said back portion and facing outwardly thereof, and

second edge means located below said first edge means and outwardly of said elongate element from said back portion and facing inwardly towards said back portion,

said shoulder belt being received over said first edge means and under said second edge means,

whereby tension in said shoulder belt in use urges said upper bar against said back portion therebeneath, to thereby resist movement of the connector means along said elongate element.

4,243,267

SAFETY SUPPORTING DEVICES FOR REARWARDLY TILTABLE VEHICULAR CARGO BOXES

William G. Meyers, R.R. #1, Gretna, Nebr. 68028

Filed Jul. 24, 1978, Ser. No. 927,654

Int. Cl.³ B60P *1/04*

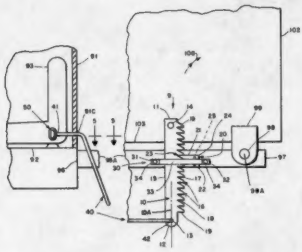
U.S. Cl. 298—17 B **12 Claims**

1. In combination with a rearwardly tiltable vehicular cargo box extending longitudinally along a central-axis and including a pair of longitudinal chassis members with the cargo dumping box located thereabove, a safety supporting device to automatically securely maintain the cargo dump box in rearwardly tilted elevated condition until released by vehicular personnel and comprising:

A. an elongate multi-teeth rack extending along a rack-axis and having an upper-end and a lower-end, the rack upper portion being freely pivotably secured with a transversely extending pivot-pin to the dump box forwardly of its transverse-axis connection to the chassis but nearer thereto than to the cargo box transversely extending front-end, the rack lower-end being located below the cargo box base panel;

B. a fixed-elevation and non-rotatable detent attached to the chassis and located wholly below the cargo box base panel

and actuatably engageable with the rack, the configuration of the detent and the rack teeth being such that the teeth of the freely pivotably depending rack slide upwardly but not downwardly against the detent whereby as said rack commences to move downwardly said detent maintains the dump box tilted elevation through the intervening multi-teeth rack;



C. means attached to the chassis and located below the cargo box base panel for maintaining the rack in longitudinal alignment with the detent; and

D. means for longitudinally directionally withdrawing the rack lower portion whereby the rack pivots at its pivot-pin and moves longitudinally away from the detent permitting the tiltably elevated cargo box to descend.

4,243,268

MINERAL MINING INSTALLATION WITH PLANER AND JET CARRIER

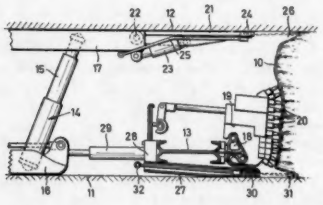
Armin Löbbe, Oberaden, and Hans-Th. Grisebach, Unna, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,864

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1977, 2751790

Int. Cl.³ E21C *27/18*

U.S. Cl. 299—32 **13 Claims**



1. In a mineral mining installation wherein a mineral winning machine is guided by guide means for movement in a mine working along a mineral face to strip mineral therefrom with the aid of cutters; the improvement comprising carrier means movably interconnected with said guide means for displacement in relation to the mineral face independently of said guide means and said winning machine, and high-pressure fluid nozzles supported on said carrier means, said nozzles emitting high pressure fluid jets capable of producing a channel in an area of the mineral face other than the area being stripped by said cutters.

4,243,269

EDGE LUGGED TIRE CARRYING RIM AND WHEELS

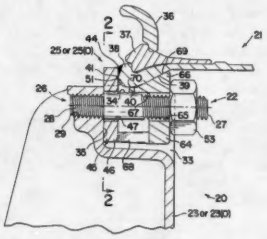
William D. Walther, Kettering, and Robert A. DeRegnaucourt, Bellbrook, both of Ohio, assignors to Dayton-Walther Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 749,241, Dec. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 592,504, Jul. 9, 1975, abandoned. This application Jun. 6, 1978, Ser. No. 913,013

Claims priority, application Canada, Dec. 12, 1977, 292871

Int. Cl.³ B60B *23/10*

U.S. Cl. 301—12 R **3 Claims**



1. A combination of dual inner and outer tire carrying rims mounted on a vehicle wheel, said outer rim being seated and locked on said wheel by fastening assemblies,

said wheel having a plurality of inner and outer spoke members, each said outer spoke member having a felloe comprising spaced-apart axially projecting wing portions providing outwardly facing dual axially oriented surfaces and a radially directed surface extending inwardly between said axially oriented surfaces substantially perpendicular to the rotational axis of said wheel and providing a mounting location for an axially projecting component of said fastening assemblies,

said outer rim having a rim base edge portion with a radially inclined axially inner surface intersecting an axially oriented radially inner surface intersecting a radially directed axially outer surface and a plurality of clamp lugs integrally secured to said radially directed axially outer surface, each said clamp lug having a radially inwardly directed leg portion substantially perpendicular to the rotational axis of said outer rim with a bore therein for receiving said axially projecting component of said fastening assemblies,

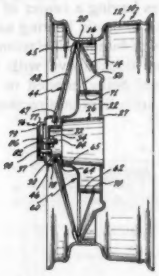
each said fastening assembly comprising a threaded fastener and a clamp element supported on said threaded fastener, each said clamp element having lateral wing portions providing downwardly facing dual axially oriented surfaces and a radially outer portion with a radially inclined surface,

whereby, said outer rim is seated on, and thereafter locked on, said outer spoke members by tightening of said fastening assemblies and the mating engagement of said radially directed surface on each said outer spoke felloe with said radially directed leg portion on each said clamp lug, and by the mating engagement of said axially oriented radially inner surface on said outer rim base edge portion with said outwardly facing dual axially oriented surfaces on each said outer spoke felloe, and by the mating engagement of said radially inclined surface on each said clamp element on each said fastening assembly with said radially inclined axially inner surface on said outer rim base edge portion, said downwardly facing dual axially oriented surfaces on said lateral wing portions of each clamp element on each said fastening assembly being in mating engagement with said outwardly facing dual axially oriented surfaces on each said outer spoke felloe.

4,243,270
WIRE BASKET WHEEL ASSEMBLY

Aaron J. Fenton, Pacific Palisades, and E. J. O. Scott-Ellis, Rancho Palos Verdes, both of Calif., assignors to Fenton Company, Gardena, Calif.

Filed Jul. 31, 1978, Ser. No. 929,832
Int. Cl.[3] B60B 7/00
U.S. Cl. 301—37 SS 3 Claims

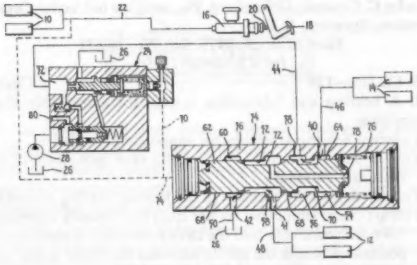


1. As an article of manufacture, a wire basket unit adapted for use in combination with a wheel to simulate a wire wheel comprising in combination a frame having a circular peripheral wire element, an inner and smaller circular wire element, means forming a pattern of wire elements extending between the first circular element and the inner circular element, a circular cup-shaped member positioned to cover up the bolt holes of a wheel, the said cup-shaped member having a smooth outer surface, the said frame having an additional pattern of wire elements extending between the outer circular member and the periphery of the cup-shaped member for holding the cup-shaped member in position, the cup-shaped member being visible through the said frame being unobstructed by cross-laced wire elements, the said article being constructed to be adapted for use in combination with a wheel having a hub cap the said inner circular wire element of the frame being configurated to fit over the outer end of the hub cap, and means for securing the frame by way of securement to the hub cap.

4,243,271
HYDRAULIC BRAKING SYSTEM

Robert M. Dwyer, Livonia, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed May 31, 1979, Ser. No. 44,785
Int. Cl.[3] B60T 8/26, 11/32
U.S. Cl. 303—7 17 Claims



1. A hydraulic braking system for a vehicle having brakes and a trailer having brakes, the trailer brakes being hydraulically operated at a pressure range proportionately greater than the pressure range required for operating the vehicle brakes; said system comprising:

a brake master cylinder which, when operated, is capable of delivering pressurized fluid within a first pressure range;

a source of fluid under pressure:

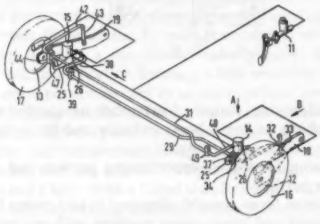
a pilot operated trailer brake valve interconnected with the source of fluid under pressure and which, when operated, is capable of delivering fluid to an outlet port within a second pressure range greater than the first pressure range; and

pilot operated control means interconnecting said outlet port with the vehicle brakes and the trailer brakes and which, when operated, is capable of causing the rear vehicle brakes to be hydraulically operated within said first pressure range and the trailer brakes to be hydraulically operated within said second pressure range.

4,243,272
RESILIENT LINKAGE MEANS FOR USE IN VEHICLE FLUID PRESSURE BRAKING SYSTEMS

Alastair J. Young, Kenilworth, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Sep. 18, 1979, Ser. No. 76,809
Claims priority, application United Kingdom, Sep. 20, 1978, 37547/78
Int. Cl.[3] B60T 8/18
U.S. Cl. 303—22 R 3 Claims



1. In a vehicle fluid pressure braking system comprising:

a driver-controlled source of fluid pressure;

one brake for a resiliently suspended wheel on one side of the vehicle;

another brake for a resiliently suspended wheel on the other side of the vehicle;

one valve device interposed between the source and said one brake; and

another valve device interposed between the source and said other brake;

each valve device including a plunger which is movable by fluid pressure transmitted to the respective brake against a respective biassing load to prevent the pressure in the respective brake increasing at the same rate as the source when the pressure to the respective brake exceeds a magnitude dependent on the respective biassing load;

resilient linkage means for connecting the plungers of the valve devices with suspension components of said wheels to provide biassing loads on the plungers which progressively vary with the vertical positions of said wheel relative to the vehicle body such that each biassing load increases with upward movement of the associated wheel relative to the vehicle body but decreases at a lower rate with upward movement of the non-associated wheel;

the resilient linkage means comprising:

a pair of torsion bars each having a crank arm on one end;

a bearing support adjacent the crank arm and torque reaction means at the other end;

the plunger of one of the valve devices in use being connected to the suspension component of one of said wheels through the bearing support of one torsion bar and to the suspension component of the other of said wheels through the torque reaction means of the other torsion bar and the plunger of the other of the valve devices in use being

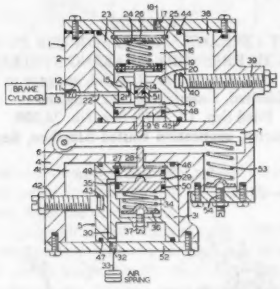
connected to the suspension component of said other wheel through the bearing support of said other torsion bar and to the suspension component of said one wheel through the torque reaction means of said one torsion bar.

4,243,273

ADJUSTABLE VARIABLE LOAD VALVE DEVICE

Raymond C. Wright, deceased, late of Irwin, Pa. (by Helen A. Wright, executrix), assignor to American Standard Inc., Wilmerding, Pa.

Filed Jun. 19, 1979, Ser. No. 50,045
Int. Cl.³ B60T *8/22*
U.S. Cl. 303—22 A **8 Claims**



1. An adjustable variable load valve device for use in a railway vehicle having a brake cylinder and air springs, said load valve device comprising:

(a) a casing having an upper casing portion and a lower casing portion;

(b) a fulcrum lever operably disposed in said casing between said upper and lower casing portions with one end pivotally anchored to the casing and having its other end free;

(c) piston-valve means operably disposed in said upper casing portion for controlling supply and cut-off of actuating fluid pressure to and from the brake cylinder and for exerting a downwardly-directed force at a preselected contact point on an upper side of said fulcrum lever commensurate with the pressure of said actuating pressure; and

(d) control piston means operably disposed in said lower casing portion and subjected to prevailing air spring pressure for exerting an upwardly directed force at a preselected contact point on a lower side of said fulcrum lever commensurate with said air spring pressure, the two forces thus establishing a brake cylinder pressure to air spring pressure ratio in accordance with moment arms determined by the two contact points on the fulcrum lever at which the respective forces act,

(e) said piston-valve means and said control piston means being axially positionally adjustable relative and parallel to said fulcrum lever for varying the respective contact points and consequently the brake cylinder pressure to air spring pressure accordingly.

4,243,274

HYDRODYNAMIC BEARING WITH RADIAL, THRUST AND MOMENT LOAD CAPACITY

Jerome Greene, 1241 Barclay Ct., Westlake Village, Calif. 91361

Continuation of Ser. No. 757,324, Jan. 6, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,594
Int. Cl.³ F16C *7/04, 17/06, 27/06*
U.S. Cl. 308—9 **10 Claims**

1. A fluid film bearing assembly comprising:

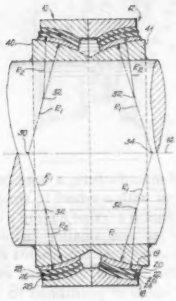
(a) at least two cylindrically arranged groups of bearing pads disposed about a longitudinal axis of rotation, one group being longitudinally spaced along said axis with respect to the other group;

(b) pad support areas located beneath each pad;

(c) the bearing pads each comprising:

(i) a face portion having a curved bearing surface facing generally towards said axis, and a spherically curved rear surface facing a concentric surface of a respective bearing support area, the concentric surfaces defining interface surfaces having a center of curvature located between said axis and said bearing surface;

(ii) alternate layers of laminated elastomer-inelastic material between and coextensive with the interface surfaces, the material being bonded to the interface surfaces and being compliant in directions along the inter-



face surfaces but rigid in a radial sense with respect thereto, so that the face portion is supported upon and secured to a respective pad support area by said material in a manner that positively restricts the freedom of motion of said face portion to swinging movement relative to the pad support area in a plurality of directions about a swing center corresponding to said center of curvature during bearing operation, and said material provides an elastic restoring force that resists such swinging movement; and

(d) said bearing surfaces having concave curvatures that are symmetrically and uniformly disposed about said longitudinal axis, the bearing surfaces of each group of bearing pads being inclined relative to said axis in opposite directions so that they face away from one another along said axis.

4,243,275

BEARING AND LUBRICATION SYSTEM

Charles C. Czuszak, Greensburg, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 29, 1979, Ser. No. 24,831
Int. Cl.³ B61F *17/16*
U.S. Cl. 308—128 **5 Claims**

1. A bearing and lubrication system for a rotatable shaft comprising:

a journal bearing assembly for supporting the shaft;

a thrust bearing assembly for limiting axial movement of the shaft and including

a cavity defined by surfaces of the journal bearing assembly,

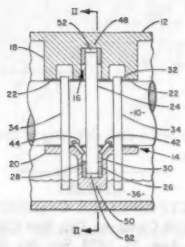
a thrust collar supported by the shaft and radially extending outward therefrom into the cavity, and thrust plate means positioned within the cavity between the thrust collar and the surfaces of the journal bearing assembly defining the cavity, and radially spaced from the shaft;

a ring surrounding the shaft and having a portion of the inner surface thereof drivingly engaged by the shaft wherein rotation of the shaft causes rotation of the ring;

a supply of lubricant disposed beneath the ring in the path of

travel thereof as the ring rotates under the influence of the shaft, wherein rotation of the ring causes lubricant to cling thereto and be elevated thereby, and wherein a first portion of the elevated lubricant is introduced to the journal bearing assembly to lubricate surfaces thereof and a second portion of the elevated lubricant is radially thrown outward by the ring; and

trough means for collecting lubricant radially thrown outward by the ring; and



conduit means for conducting lubricant from the trough means into the thrust bearing assembly to lubricate surfaces thereof and including

channel means for guiding lubricant from the trough means and into the area radially between the shaft and the thrust plate means and axially between the thrust collar and the surfaces of the journal bearing assembly defining the cavity.

4,243,276

ROLLING BODY RETAINER

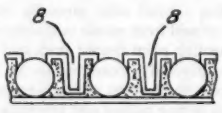
Stig Persson, and Sture Östling, both of Katrineholm, Sweden, assignors to Aktiebolaget SKF, Gothenburg, Sweden

Continuation of Ser. No. 934,711, Aug. 21, 1978, abandoned. This application Mar. 4, 1980, Ser. No. 127,029

Claims priority, application Sweden, Sep. 22, 1977, 7710607

Int. Cl.³ F16C *33/38*

U.S. Cl. 308—187 **3 Claims**



1. A unitary one-piece rolling element retainer for roller bearings consisting of inner and outer rings and rolling elements between the rings, comprising a one-piece body member made of a foamed plastic material consisting of at least one homogeneous liquid impermeable hard and rigid outer peripheral surface portion and at least one porous portion of the same material, said porous portion being filled with a lubricant, means defining at least one pocket for a rolling element in said body member, the rolling element contacting said porous portion to draw lubricant therefrom during operation, said rolling element also contacting said outer surface portion at the periphery of the pocket to prevent escape of lubricant from the retainer except through contact with the rolling element.

4,243,277

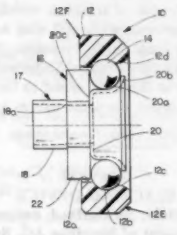
BALL BEARING

John E. Fortuna, Cedar Springs, Mich., assignor to Knape & Vogt Manufacturing Co., Grand Rapids, Mich.

Filed Aug. 8, 1979, Ser. No. 64,386

Int. Cl.³ F16C *33/58*

U.S. Cl. 308—195 **2 Claims**



1. A ball bearing comprising:

an outer race, an inner race subassembly, and a plurality of balls therebetween;

said outer race comprising a polymeric annulus having three axial portions of different internal diameters, including an inner portion of smallest diameter, an intermediate portion of largest diameter, and an outer portion; said intermediate portion forming a curvilinear, radially-outer, ball track, and said inner portion forming a ball retention shoulder; said outer portion having an annular resilient convex snap rib blending axially inwardly into said curvilinear ball track and blending axially outwardly in a chamfer;

said inner race subassembly comprising a hollow spindle and a washer thereon; said hollow spindle having a cylindrical stem and a body with a flared wall forming a radially inner ball track; an integral shoulder between said stem and said body; said washer being on said stem against said shoulder in engagement with said balls to axially trap said balls between said annulus and said flared wall; and said stem being swaged at said annulus to so retain it on said annulus while also forming a mounting member for attachment of said bearing to a support.

4,243,278

LINEN TOWEL CABINETS

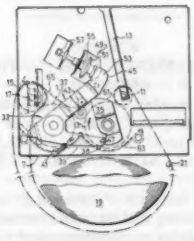
Douglas W. Gray, Chester, England, assignor to Saltney Engineering Company Limited, Deva Works, United Kingdom

Filed Jul. 19, 1978, Ser. No. 925,956

Claims priority, application United Kingdom, Sep. 2, 1977, 36734/77

Int. Cl.³ B65H *19/00*

U.S. Cl. 312—38 **28 Claims**



1. A mechanism for a towel cabinet, said mechanism including a frame, a rear roller, means mounting said rear roller in said frame so that it is able frictionally to engage a portion of

dirty towel which is to be wound onto an idler roller, a front roller, means mounting said front roller in said frame whereby clean towel may be entrained over said front roller before passing over a pinch roller and emerging for withdrawal from a cabinet in which the mechanism may be housed, drive means between said front and rear rollers so that said rear roller is rotated by a different angular amount from said front roller on rotation of said front roller, a stop arm rotatable with said rear roller each time a length of towel is withdrawn, and a latch movable into engagement with said stop arm on rotation of said rear roller to prevent further rotation of said front roller, thereby preventing further towel withdrawal wherein the stop arm does not rotate at the same speed as the rear roller but is capable of rotating about the same axis as said rear roller but relative thereto.

4,243,279

STACKING DEVICE

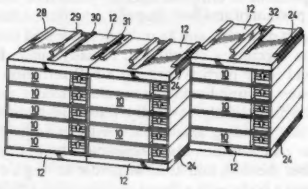
Peter Ackeret, Küsnacht, Switzerland, assignor to IDN Inventions and Development of Novelties AG, Switzerland

Filed Jan. 12, 1979, Ser. No. 2,960

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802460

Int. Cl.³ A47B *87/00*; F16B *12/00*

U.S. Cl. 312—107 **5 Claims**



1. A connecting device for the combined vertical and side-by-side stacking of rectangular containers which have complementary interlocking stacking elements only on their upper and lower surfaces, the device comprising a plurality of rectangular connector plates of minimal thickness and arranged in edge to edge relation with each other, the connector plates having upper and lower surfaces to confront the bottoms and tops of such containers, and also having lateral sides to confront adjacent lateral sides of adjacent connector plates, the connector plates having complementary interlocking type stacking elements on their upper and lower surfaces to interlock with similar stacking elements of the containers, such that they can be connected between any two containers in a stack, such plates further having complementary interlocking elements on their lateral sides and rigidly securing the lateral sides of adjacent plates together, such that aligned plates in adjacent container stacks can be detachably interconnected, to thereby lock together a plurality of container stacks in a compact block.

4,243,280

FURNITURE ASSEMBLY WITH SYNTHETIC RESIN MEMBERS

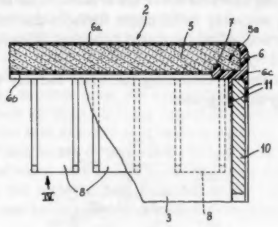
Didier Deconinck, Seyssins, France, assignor to Allibert Exploitation, Société Anonyme, Grenoble, France

Filed Apr. 5, 1979, Ser. No. 27,389

Int. Cl.³ A47B *81/00*; A47F *3/00*

U.S. Cl. 312—140 **5 Claims**

1. An article of furniture comprising at least two upright walls and a top spanning said walls and connected thereto, said top comprising a planar composition panel sheath with a synthetic resin injection molded in situ around said panel and forming a frame along the edges thereof, said frame being provided unitarily with at least one group of downwardly extending tongues molded unitarily with said frame and fitting into one of said walls, another edge of the top being formed with a pair of downwardly extending flanges formed unitarily



with the synthetic resin and defining a groove receiving another of said walls.

4,243,281

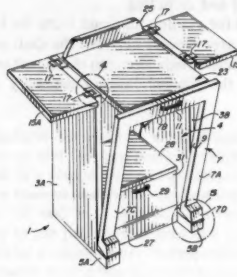
TYPEWRITER CABINET

Paul R. Egger, 10616 Campana Dr., Sun City, Ariz. 85351

Filed Aug. 23, 1979, Ser. No. 68,941

Int. Cl.³ A47B *21/00*, *81/00*

U.S. Cl. 312—208 **12 Claims**



1. A cabinet for supporting a typewriter, said cabinet comprising in combination:

(a) a wall partially enclosing an interior volume of said cabinet;

(b) base means for supporting said wall;

(c) front means pivotally connected to said base means, said front means having an upper edge;

(d) support means for supporting the typewriter in a retracted position and in a raised, level position, said support means having a front edge pivotally connected to the upper edge of said front means said support means having a first connecting point spaced from said front edge;

(e) arm means pivotally connected to the first connecting point for guiding the first connecting point through an arcuate path during raising and lowering of said support means, said arm means having a first pivot point pivotally connected to a first fixed point within the interior volume, said arm means also having a second pivot point spaced from the first pivot point, the second pivot point being pivotally connected to the first connecting point of said support means, the second pivot point being located substantially below and forward of the first fixed point when said support means is in the retracted position, the second pivot point being located substantially above and rearward of the first fixed point when said support means is in the raised, level position; and

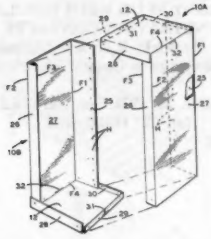
(f) means for urging rotating of said arm means as said support means moves between the retracted position and the raised, level position.

4,243,282

KNOCK DOWN CABINET

Mark S. Densen, Summit, N.J., assignor to Eastern Packaging and Display Co., Bloomfield, N.J.

Filed Feb. 22, 1979, Ser. No. 14,257
Int. Cl.³ A47B *43/02, 61/00*
U.S. Cl. 312—259 **9 Claims**



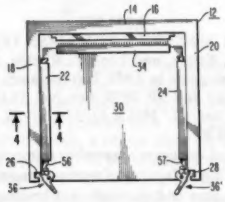
1. An inexpensive cardboard storage cabinet for clothes comprising primarily of two like die-cut pieces,
one piece comprising a top, side, about one-half of the back and horizontal front, side and back flaps, the other like piece being reversed forming the bottom, the opposite side, the other half of the back and the other front, side and back flaps,
top and bottom track means extending transversely along the front of said cabinet,
a door slidably mounted on said track means,
matching holes on said back and said flaps,
means secured in said aligned matching holes for holding said backs and said flaps together,
in which there are opposed thin metal plates bent over the top edges of said cabinet, each of said plates having a hole formed therein, a hanger rod having projecting end pins, said end pins being received in the holes of said opposed plates for supporting said hanger rods therebetween.

4,243,283

CIRCUIT BOARD GUIDE AND GROUND CONNECTOR

Joseph F. McSparran, Cherry Hill, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 17, 1979, Ser. No. 76,141
Int. Cl.³ H05K *1/07*
U.S. Cl. 339—14 R **4 Claims**



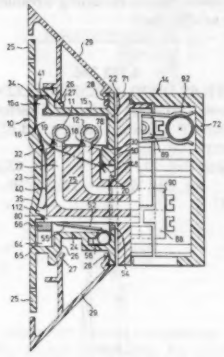
1. The combination of:
a printed circuit board having an electrical connector plug on one end edge of the board, and having a printed circuit ground plane conductor on at least one surface on at least one side edge of the board,
a chassis supporting an electrical connector socket, and supporting channels to guide the side edges of the board so that the plug engages the socket, at least one of said channels being resilient, conductive and provided with internal protrusions spaced along the length of the channel,
a drawbar within said resilient conductive channel and having gibs for engagement with said protrusions to normally hold the conductive channel out of electrical contact with said ground plane conductor on the board,
means to move the plug on the board into engagement with the socket on the chassis, and
means to move the drawbar longitudinally to disengage the gibs from the protrusions to thereby allow the resilient conductive channel to move into electrical contact with the ground plane conductor on the board.

4,243,284

ELECTRICAL DISTRIBUTION SYSTEM

Michael Humphreys, 135 Cavendish Ave., Ealing, London W.13, England

Filed Jul. 13, 1979, Ser. No. 57,540
Claims priority, application United Kingdom, Jul. 21, 1978, 30620/78
Int. Cl.³ H01R *13/44, 25/00*
U.S. Cl. 339—21 R **28 Claims**



1. An electrical distribution system, comprising a hollow conduit, a plurality of continuous electrical conductors disposed within a first region of the conduit, a longitudinally-extending aperture in one wall of a second region of the conduit spaced from said first region, said aperture communicating with and allowing access to said second region of the interior thereof opposite the conductors at any one of a number of locations, the conductors being transversely offset from a reference axis extending perpendicular to the aperture and into said second region of the conduit, and gate means located within the conduit and being movable from a normally closed position in which the gate means protectively partitions the first region of the conduit from the second region thereof to deny access to the conductors, but in which access to the second region of the conduit via the aperture can be achieved, to an open position in which access to the conductors via the aperture can be achieved.

4,243,285

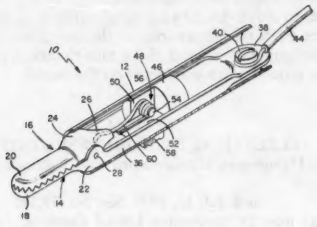
CLAMP-PLUG TYPE CONNECTOR

Charles F. Crowley, Peabody, and Albert R. Pratt, Weston, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 26, 1978, Ser. No. 973,487
Int. Cl.³ H01R *13/62, 11/22*
U.S. Cl. 339—32 R **8 Claims**

1. A pressure connective device comprising:
a pair of opposing jaw members having respective clamping portions disposed adjacent one another and respective other portions disposed for relative pivotal movement about an axis, one of said other portions having a surface provided with reverse angulated portions disposed on respective opposing sides of the axis; and
means disposed between said other portions and movable to

either side of said axis for pivotally biasing said clamping portions relative to one another in a selected direction, said means including adjustable pressure means urged



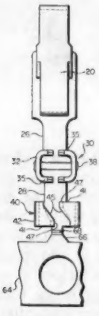
against said surface of said one of the other portions for pivoting the jaw member in a desired direction, said adjustable pressure means including a resilient member movable along said surface.

4,243,286

INSULATION DISPLACEMENT CONNECTOR

Vincent B. Brown, Prospect Heights; Charles A. Kozel, McHenry, and John T. Scheitz, Palatine, all of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed Feb. 21, 1979, Ser. No. 13,238
Int. Cl.³ H01R *4/26, 13/50*
U.S. Cl. 339—97 R **11 Claims**



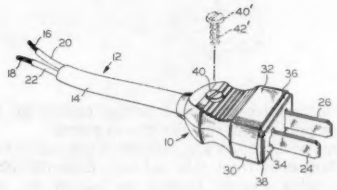
1. An insulation displacement connector for an electric wire having a conductive core and an insulation overwrap, comprising the combination of a housing having walls defining an elongate channel and a terminal adapted to fit within the channel and present an exposed wire securing end to which the wire is to be connected, said wire securing end having a base and first and second pairs of opposed jaws upstanding therefrom at axially spaced locations along the base, the first pair of jaws including knife edges converging to opposed gripping edges adjacent the base that are spaced apart transversely of the channel a distance slightly less than the diameter of the conductive core, the second pair of jaws having opposed tabs angled toward the base and each other, said tabs terminating along adjacent edges that extend partially transverse to the channel and thereby terminate at axially offset endmost projections disposed approximately halfway across the channel and spaced above the base distances corresponding approximately to the diameter of the insulation overwrap, whereby when said wire with the overwrap thereon is aligned over the exposed pairs of jaws and forced transversely therebetween and against the base, said knife and gripping edges of the first pair of jaws displace the insulation overwrap and frictionally contact the conductive core to establish an electrical connection between the terminal and wire and also to axially restrain the wire relative to the terminal, and the tabs on said second pair of jaws overlie and trap the wire against the base and transversely restrain the wire relative to the terminal.

4,243,287

DEAD FRONT PLUG WITH INSULATION PENETRATING CONTACTS

Donald F. Smith, Warwick, R.I., and Michael J. Ostrelich, Easton, Conn., assignors to General Electric Company, New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,172
Int. Cl.³ H01R *4/02*
U.S. Cl. 339—99 R **6 Claims**



1. An electrical connector adapted for insulation penetration comprising,

an insulating body having a center section and two side sections adapted to fold together in valise-like formation,

a pair of power blades extending through the center section of said body,

the side surfaces of the inner portions of said blades having insulation penetrating cutting edges,

wire receiving troughs in one side section of said insulating body,

said troughs being aligned with the cutting edges of said power blades,

and the cutting edges extending at least partially into said troughs,

means for urging said blades into said troughs and for holding them in place therein.

4,243,288

CONNECTOR ASSEMBLY FOR MASS TERMINATION

John E. Lucius, Etters, and Leon T. Ritchie, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 28, 1979, Ser. No. 53,150
Int. Cl.³ H01R *13/514, 13/58*
U.S. Cl. 339—99 R **7 Claims**

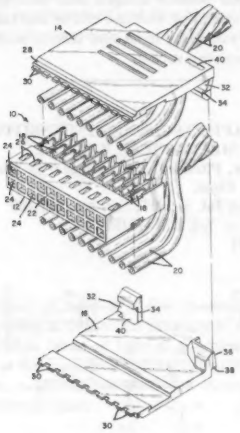
1. An electrical connector assembly comprising:

a housing having a plurality of terminal passageways extending from a rear end through said housing to open on a front mating face, each said passageway being fully enclosed at the mating face end and outwardly directed open channel shaped at the rear end remote from said mating face;

a plurality of terminals each mounted in a respective one of said passageways, each said terminal having a forwardly directed mating portion lying in said fully enclosed portion of said passageway, and an insulation displacing rear portion lying in and accessible from said rear channel shaped portion; and

a pair of hermaphroditic cover members each having a forward end profiled to be receivable in said fully enclosed portions of said passageways to hold said cover

members in assembly therewith and intermating rear latching portions to hold said cover members together,



whereby terminals pre-loaded in said housing can be terminated by a low forced insulation displacing movement and enclosed by application of the hermaphroditic cover members.

4,243,289

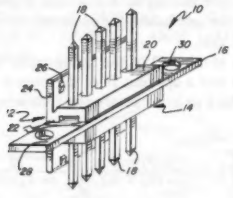
ELECTRICAL MALE CONNECTOR ASSEMBLY

Charles A. Kozel, McHenry, Ill., assignor to Methode Electronics, Inc., Chicago, Ill.

Continuation of Ser. No. 871,341, Jan. 23, 1978, abandoned. This application Jul. 18, 1979, Ser. No. 58,540

Int. Cl.³ H01R *13/514*

U.S. Cl. 339—126 RS **8 Claims**



1. An electrical male connector assembly comprising, in combination, a first header body member of insulating material having a plurality of pin openings therein, a plurality of rigid electrically conductive parallel pins extending through said first header body member, a center layer section of insulating material having a plurality of pin openings therein, said center layer section being mounted on said plurality of pins adjacent said first header body member, and a second header body member of insulating material having a plurality of pin openings therein, said second header body member being mounted on said plurality of pins adjacent said center layer section on a side opposite said first body member whereby said first and second body members are disposed on opposite sides of said center layer section and held together in assembled relation at least in part by a frictional fit with said common set of conductive pins, said conductive pins being of a length substantially greater than the thickness of said first and second body members and said center layer section and being positioned relative to said first and second body members so as to project substantially beyond the outer surfaces of both of said first and second body members for mating with female connection contacts or to serve as wire wrap termination posts, and mounting means on said center layer section for mounting said male connector assembly.

4,243,290

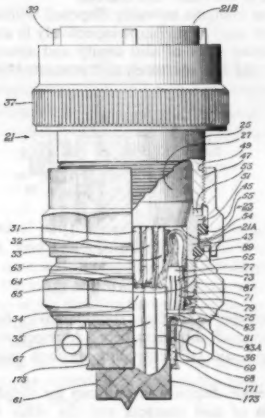
SHIELD TERMINATION MEANS FOR ELECTRICAL CONNECTOR

Robert A. Williams, 55 Bounty Rd. East, Fort Worth, Tex. 76116

Filed Oct. 30, 1978, Ser. No. 955,910

Int. Cl.³ H01R *13/698, 17/18*

U.S. Cl. 339—143 R **25 Claims**



1. Electrical connector means, comprising:

a body having a central opening for receiving electrical leads through a first end,

an electrical connector coupled to the opposite end of said body,

said electrical leads being connected to said electrical connector,

shield means surrounding said electrical leads, and

annular shield termination means comprising a plurality of axially extending flexible fingers located around said leads in said opening at said first end of said body with a portion of said shield means being held against the inner wall of said body by the outer portions of said fingers of said annular shield termination means,

said fingers defining a portion of said shield termination means having an outside diameter greater than that of one end of said shield termination means,

said shield termination means being located within said opening of said body such that said one end is closer to said electrical connector than the other end thereof.

4,243,291

POLARIZED ELECTRICAL OUTLET

Robert D. Leighton, Brockton, Mass., assignor to Alden Research Foundation, Brockton, Mass.

Filed Nov. 3, 1978, Ser. No. 957,461

Int. Cl.³ H01R *13/64, 13/50*

U.S. Cl. 339—184 M **8 Claims**

1. A polarized electrical outlet for receiving a male plug with polarized blades of dissimilar widths comprising:

a body and a cap, said body and said cap each being formed of a thermoplastic material;

said cap including a plate with first and second planar surfaces disposed on opposite sides thereof, said first planar surface adapted to butt against the rear of a panel;

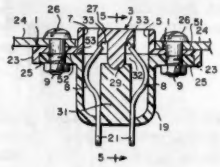
a crown having a generally rectangular rim integrally molded and disposed on the first planar surface;

a first cap-aperture and a second cap-aperture disposed in said crown and passing through said plate, said first cap-aperture being wider than said second cap-aperture so as to receive the wider of said polarized blades;

a web disposed between the exterior edges of said first cap-aperture and the rim of the crown, the width of the web between the ends of the first cap-aperture and the rim of the crown being substantially the same as the width of the web between the side of the first cap-aperture and the rim of the crown;

said body having a central cavity therein and a mouth disposed at one end thereof and a pair of body-apertures disposed at the other end thereof;

two arcuate contacts movably disposed within said cavity with their convex surfaces respectively in abutment with the opposed sides of said cavity and arranged directly beneath said cap-apertures, said contacts being narrowed



at one end thereof to form shoulders with tabs extending therefrom, said shoulders being arranged to rest on the cavity and said tabs extending through said body-apertures;

slotted recesses disposed in said cap for slidably engaging first ends of said contacts and the other ends of said contacts resting against the interior of said body, said contacts being free to expand lengthwise into said slotted recesses as the blades of a mating plug are inserted between the convex surfaces of the contacts and the opposed sides of the cavity;

a third planar surface integrally molded and disposed on opposite sides of said mouth and arranged to butt said second planar surface in a parallel face-to-face association; and

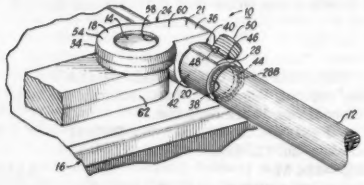
sealing means disposed on said second and/or third planar surface for bonding said second and third planar surfaces together and form the connector.

4,243,292

LOW PROFILE BATTERY CONNECTOR

Joseph D. Kinnear, Western Springs, Ill., assignor to Brad Harrison Company, LaGrange, Ill.

Filed Sep. 10, 1979, Ser. No. 73,606
Int. Cl.³ H01R *11/28*
U.S. Cl. 339—224 **9 Claims**



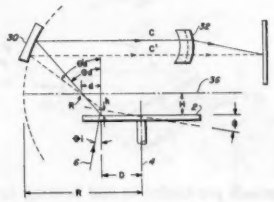
1. A battery cable connector comprising a body formed of lead and partially encapsulating a core assembly formed of copper, the core assembly including a ring and a tube contacting one another with a point on the ring periphery adjacent one end of the tube and with the ring lying in a plane generally tangent to the tube, said body including a first washer-like portion entirely enclosing said ring and defining a battery post receiving opening, the thickness of said washer-like portion being smaller than the inside diameter of said tube, said body including a second portion integral and homogeneous with said first portion enclosing said one end of said tube, the other end of said tube extending from said second body portion to define a cable receiving socket.

4,243,293

HOLOGRAPHIC SCANNER INSENSITIVE TO MECHANICAL WOBBLE

Charles J. Kramer, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 3, 1978, Ser. No. 921,409
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—3.71 **1 Claim**



1. In a holographic scanning system which includes a holographic spinner disposed in the path of a light ray from a source of coherent light; said holographic spinner having at least one holographic facet formed on its surface, a method of creating a condition whereby the spinner is insensitive to tilting caused by mechanical wobble during rotation including the steps of:

(a) directing said light ray incident upon the holographic spinner at an angle of incidence θ_i, said spinner diffracting said ray at a first order diffraction angle θ_d,

(b) disposing a spherical mirror in the path of said diffracted ray, said mirror having an axis which is perpendicular to the spinner axis and having its center of curvature lying on said spinner axis,

(c) selecting a spacing D of the holographic facet from the spinner axis and a spacing H of the mirror axis from the spinner surface so as to satisfy the following Equation:

$$D = -\left[1 \mp \frac{\cos(\theta_1 + \phi)}{\cos(\theta_d \mp \phi)}\right] \frac{H}{\sin\theta_d \cos\phi_d}$$

where ϕ is the nominal angle about which the spinner is tilted and where the upper signs apply to transmission type spinners and the lower to reflection type and

(d) focusing the diffracted rays which are reflected in parallel paths from the mirror upon an imaging surface.

4,243,294

METHOD AND APPARATUS FOR GENERATING SYNCHRONIZING SIGNAL FOR A BEAM SCANNER

Masaru Noguchi, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 29, 1977, Ser. No. 811,222
Claims priority, application Japan, Jul. 1, 1976, 51/77018
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.8 **8 Claims**

1. A method for generating a synchronizing signal for a light beam scanner including a rotary, multi-surfaced mirror, comprising:

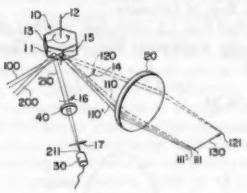
(a) directing a first, scanning beam of light at a surface of the mirror for reflection and deflection thereby,

(b) directing a second, synchronizing signal generating beam

of light at the same surface of the mirror for reflection and deflection thereby,

(c) said second beam of light striking said mirror surface at a position in advance of said first beam of light, and

(d) detecting the presence of the reflected and deflected



second beam of light at a first predetermined position corresponding in time to the presence of the reflected and deflected first beam of light at a second predetermined position in the vicinity of the start point of an information scan line, whereby the detection output constitutes a synchronizing signal.

4,243,295

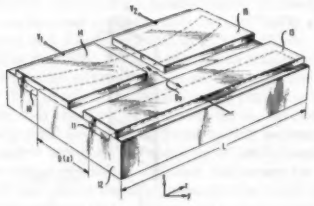
POLARIZATION-INDEPENDENT OPTICAL DIRECTIONAL COUPLER SWITCH/MODULATOR

Rodney C. Alferness, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 19, 1979, Ser. No. 77,092

Int. Cl.[3] G02B *5/14*; G02F *1/137*

U.S. Cl. 350—96.14 **3 Claims**



1. A switch/modulator comprising:

a pair of optical waveguides (10,11) supportive of TE and TM propagating modes having an interaction length L and coefficients of coupling for said modes that taper from a minimum at the ends of said waveguides to a maximum at a point therebetween;

and means (13,14,15) for impressing voltages (V_1, V_2) across selected portions of said waveguides;

characterized in that:

the waveguide parameters are such that the resulting normalized integrated coupling strengths $2s_{TE}/\pi$ and $2s_{TM}/\pi$ for said modes are between 1 and 1.3 or between 2.7 and 3;

and in that $s_{TM} > s_{TE}$ in the region 1 to 1.3; and $s_{TM} < s_{TE}$ in the region of 2.7 to 3.

4,243,296

OPTICAL UNIT HAVING A LONGITUDINAL SIDE COUPLING ZONE

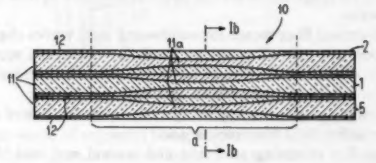
Hubert Aulich; Franz Auracher, and Hans H. Witte, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 946,521, Sep. 27, 1978, abandoned. This application Mar. 22, 1979, Ser. No. 22,705

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743368

Int. Cl.[3] G02B *5/14*

U.S. Cl. 350—96.15 **4 Claims**



1. In an optical unit having at least one longitudinal side coupling zone, said unit comprising at least one glass fiber having a glass core, a glass cladding layer surrounding the core with a step in the index of refraction from a greater to a lower value occurring at the junction between the glass core and the cladding layer, the improvement comprising the cross section of each glass fiber remaining uniform with constant outer dimensions along the entire length of the fiber and the core having at least one constriction to form the longitudinal coupling zone for each fiber.

4,243,297

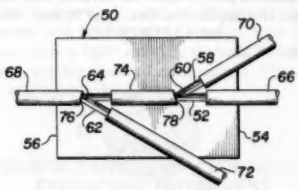
OPTICAL WAVELENGTH DIVISION MULTIPLEXER MIXER-SPLITTER

Glenn R. Elion, Natick, Mass., assignor to International Communications and Energy, Inc., Natick, Mass.

Filed Jun. 27, 1979, Ser. No. 52,895

Int. Cl.[3] G02B *5/14*

U.S. Cl. 350—96.15 **20 Claims**



1. An optical wavelength division multiplexer-splitter comprising:

a substrate chip comprising a substantially flat wafer member having,

a first groove fashioned with an upper surface of said wafer and extending in a straight line across the wafer from one edge to another edge thereof, and

a second groove fashioned within the upper surface of said wafer and extending in a straight line from a third edge position thereof to a point intersecting said first groove at a generally central portion of said wafer;

first optical fiber means for conducting light waves aligned upon and extending at least partially within said first groove from said one edge of said wafer and terminating in a position adjacent the intersection of said second groove with said first groove;

second optical fiber means for conducting light waves

aligned upon and extending at least partially within said first groove and from said another edge of said wafer and terminating in a position adjacent the intersection of said second groove with said first groove and generally opposed to the terminating end of said first optical fiber means, the terminating end of said second optical fiber means being finished with a face at an angle relative to a central longitudinal axis of said second optical fiber means and the magnitude of the angle of said face with respect to a line drawn perpendicular to the central longitudinal axis of said second optical fiber means being approximately one half the magnitude of the angle formed between the central longitudinal axes of said first and third optical fiber means;

third optical fiber means for conducting light waves aligned upon and extending at least partially within said second groove and terminating in a position adjacent the intersection of said second groove with said first groove;

optical coating means applied directly upon the face of said second optical fiber means; and

means for mounting said first and second and said third optical fiber means at least partially within said first and second grooves respectively.

4,243,298

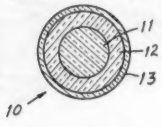
HIGH-STRENGTH OPTICAL PREFORMS AND FIBERS WITH THIN, HIGH-COMPRESSION OUTER LAYERS

Charles K. Kao, and Mokhtar S. Maklad, both of Roanoke, Va., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 807,868, Jun. 20, 1977, abandoned. This application Oct. 6, 1978, Ser. No. 949,351

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.33 **17 Claims**



1. An optical light-transmitting structure having high tensile strength comprising:

a solid cylindrical core of a first doped silica material;

a concentric cladding layer of a second doped silica material surrounding said core;

said core and layer materials being selected for good optical transmission characteristics and also for a relatively high average coefficient of thermal expansion and a relatively low average glass transition temperature; and

at least one additional concentric layer of a silica material surrounding said cladding layer;

the outermost layer being substantially thinner than the enclosed layers and consisting of a silica material having a relatively low coefficient of thermal expansion and a relatively high glass transition temperature as compared to those of the layer which it encloses.

4,243,299

OPTICAL FIBERS FOR COMMUNICATION TRANSMISSION HAVING HIGH STABILITY TO NUCLEAR RADIATION

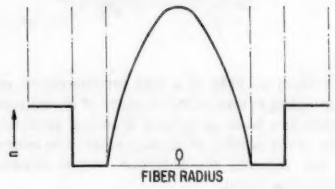
Georg Gliemeroth, Mainz-Finthen; Lothar Meckel, Oestrich-Winkel, and Peter Heinemann, Wiesbaden, all of Fed. Rep. of Germany, assignors to JEnAer Glaswerk Schott & Gen., Mainz, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,691

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1977, 2741314

Int. Cl.² G02B 5/14

U.S. Cl. 350—96.34 **15 Claims**



1. In an optical fiber comprising a light-conducting core and a borosilicate glass optical insulation cladding thereon, the improvement wherein the core and the cladding contain an amount of Sb_2O_3 effective to harden the fiber against nuclear radiation.

4,243,300

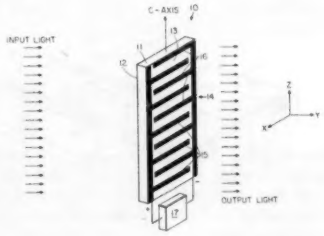
LARGE APERTURE PHASED ELEMENT MODULATOR/ANTENNA

William E. Richards, Silver Springs, Md., and Henry F. Taylor, Newbury Park, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 19, 1978, Ser. No. 970,828

Int. Cl.³ G02F 1/03

U.S. Cl. 350—150 **8 Claims**



1. A larger apertured apparatus for modulating impinging collimated optical signals in the tunable diffraction grating mode comprising:

an electro-optical crystal slab selected from the group of materials including acoustic grade lithium niobate and lithium tantalate having parallel, optically polished lateral faces dimensioned in at least of an order of magnitude greater than the crystal's thickness and fabricated from a material to orient the crystal's optic axis parallel to the lateral faces;

a first set of interdigital metallic electrodes orthogonally disposed with respect to the optic axis to extend across one of the lateral faces in an interdigital grating pattern, the dimensions of and the spacing between adjacent electrodes being such as to define a diffraction grating;

a second set of interdigital metallic electrodes disposed on the other one of the lateral surfaces in an interdigital grating pattern orthogonally disposed with respect to the crystal's optic axis and substantially identically spaced with respect to the first set of interdigital electrodes, the second set of interdigital metallic electrodes help provide a more uniform linear transverse Pockel's effect and like the first set of interdigital electrodes each electrode has a width less than the separation between adjacent electrodes to create predictable diffraction orders; and

a source of potential coupled to both sets of the interdigital electrodes, the magnitude of the potential is maintained within a predetermined range to change the intensity of the zeroth diffraction order within preestablished limits and to prevent arcing between adjacent electrodes, to drive alternating electrodes in each set plus and minus producing changing electric fields in alternating directions substantially parallel to the optic axis to permit the selective change of index of refraction in the crystal, the changing electric fields in alternating directions create a linear transverse Pockel's effect for redistributing the diffraction orders of the impinging optical signals across a spatial period of a phase shift equal to twice the electrode spacing, the crystal and the electrodes are orientated to receive, modulate and transmit optical signals impinging from within an angle of incidence centered about the normal to the lateral faces; and

an input linear polarizer disposed to receive the impinging optical signals having its transmission axis parallel to the crystal.

4,243,301

ELASTICALLY DEFORMED REFLECTORS

Roger A. Powell, 1589 Vernon Rd., Norristown, Pa. 19401

Filed Apr. 9, 1979, Ser. No. 28,124
Int. Cl.³ G02B *7/18, 5/10*
U.S. Cl. 350—296 **5 Claims**

1. A reflector comprising a flexible planar member having a reflective surface and a substantially circular shape, and means for engaging said planar member, after said member has been flexed within its elastic limits to assume an arcuate shape having a desired radius of curvature, at various locations along the periphery thereof and for maintaining said planar member in its flexed state, said engaging and maintaining means comprising a substantially rigid and circular frame having inclined surfaces and a diameter less than the diameter of said planar member when said planar member is unflexed, and means for clamping portions of said planar member, adjacent the edges thereof, to said inclined surfaces on the frame, said inclined surfaces being tangent to said arcuate shape.

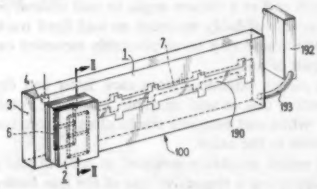
4,243,302

OPTICAL DISPLAY DEVICE

Otto Hanner, Anzing, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 24, 1978, Ser. No. 881,043
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1977, 2712325
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—345 **2 Claims**

1. An optical display device comprising a first fluorescent plate containing fluorescent particles, light outlet windows in the form of indentations on two regions of a rear surface of said first plate, the indentations in the first region being in the shape of at least one digit, the indentations in the second region being in the shape of a scale having a plurality of graduations, said indentations having frequency selective dielectric coatings for reflecting frequencies in the emission spectrum of the fluorescent particles, reflective layers on the side surfaces of the plate, a lamp embedded within said plate, a twisted nematic liquid crystal cell adjacent the front surface of said plate aligned with



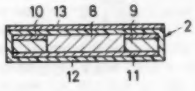
only said first region, said liquid crystal cell having electrodes in the shape of segments being aligned with the indentations in said first region, a second fluorescent plate for collecting light, and a bundle of light conductive fibers for transferring light from said second fluorescent plate to said first fluorescent plate.

4,243,303

DISPLAY DEVICE FOR ELECTRONIC TIMEPIECES

Tadao Enomoto, Higashimurayama, and Nobuo Ito, Tokyo, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 1, 1979, Ser. No. 16,570
Claims priority, application Japan, Mar. 2, 1978, 53-23951
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—345 **9 Claims**



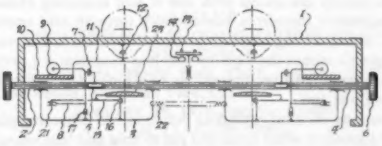
1. A display device for electronic timepieces comprising a liquid crystal display device and an illuminating device provided adjacent said liquid crystal display, said illuminating device comprising a light emitting element including tritium and a sealing member made of resin without hydrogen atoms for sealing said light emitting element.

4,243,304

CONVERGENCE MECHANISM FOR BINOCULAR REFRACTING INSTRUMENT

Rato R. Buhler, Dudley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Feb. 28, 1979, Ser. No. 16,456
Int. Cl.³ A61B *3/02, 3/10*
U.S. Cl. 351—27 **5 Claims**



1. A mechanism for converging a pair of lens batteries used for binocular refraction of patient's eyes at near and far distances which comprises, a frame, a straight fixed track supported by said frame, a shaft rotatably supported by said frame,

and shaft having a left-hand threaded portion and a right-hand threaded portion and extending parallel to said track, a pair of nuts threadably engaging a respective portion of said shaft, a pair of straight, selectively movable tracks mounted on said frame, each of said pair of straight movable tracks having a normal position and an alternate position, said normal position being parallel to said fixed track, said alternate position being spaced from and at a chosen angle to said normal position, a pair of carriages slidably mounted on said fixed track,

a carriage connecting lever pivotably mounted on each of said pair of nuts,

contact means extending from each lever and engaging a respective one of said movable tracks for rotating each lever when said movable tracks change from one of said positions to the other,

support means pivotably mounted on each of said carriages for supporting a respective one of the lens batteries,

connection means for transferring pivotal motion of each lever to said support means in each case, and

positioning means for selectively moving said pair of movable tracks from said normal position to said alternate position.

4,243,305

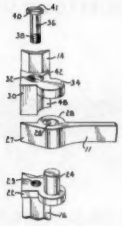
BOW AND HINGE MOUNTING ASSEMBLY FOR EYEGLASSES FRAMES

Eugene E. Elder, 121 Belmont, Hebron, Nebr. 68370

Filed May 1, 1978, Ser. No. 901,425

Int. Cl.³ G02C *5/14*

U.S. Cl. 351—121 **3 Claims**



1. In an eyeglass structure having a bow and a split frame which includes a lens encasement having upper and lower lens engaging members separated from one another at a split portion of the frame, the improvement comprising:

upper and lower mounting plates connected with and extending outwardly from the respective upper and lower lens engaging members at locations adjacent said split frame portion;

a mounting aperture in said bow having upper and lower ends and presenting an opening extending between said ends, said mounting aperture being interposed between said mounting plates with said upper and lower ends disposed against the respective upper and lower mounting plates;

a pin rigidly connected with one of said mounting plates in projection therefrom substantially through said opening of the mounting aperture to one of said upper and lower ends to mount the bow to said lens casement for pivotal movement relative thereto about a hinge axis defined by said pin; and

a fastening element extending between said mounting plates at a location offset from said pin to hold said lens engaging members together at said split portion of the frame and to secure said mounting plates against the ends of said mounting aperture with said pin extending substantially through said opening of the mounting aperture to pivotally mount the bow to the frame.

4,243,306

PAD DEVICE

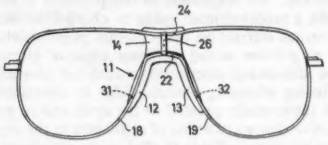
Walter H. Bononi, Zeppelinstrasse 9, 7012 Feilbach-Schmiden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 731,737, Oct. 12, 1976, abandoned. This application May 30, 1978, Ser. No. 910,486

The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.

Int. Cl.³ G02C *5/12*

U.S. Cl. 351—136 **12 Claims**



1. A pad to be applied to the root area of the nose of a person wearing spectacle frames, comprising

a homogenous material body having a closed, substantially smooth surface,

said body material being permanently bondable to material used for spectacle frames,

said body material being age-resistant and wear-resistant when worn,

said material body having a lustrous surface and can be made translucent,

said body material softness within a range of 10 to 30 measured according to DIN 53 505 on the Shore D hardness scale.

4,243,307

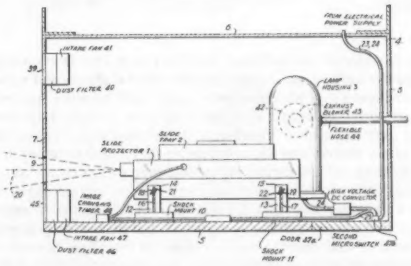
IMAGE PROJECTION SYSTEM

Dennis Rizzuto, 162-31 9th Ave., Whitestone, N.Y. 11357

Filed Dec. 11, 1978, Ser. No. 968,486

Int. Cl.³ G03B *21/16*

U.S. Cl. 353—57 **7 Claims**



1. An image projection system having a slide projector with a slide tray and a lamp housing, said image projection system comprising

a system housing having a bottom, a top, a front, a back and sides, said front having a window therein;

shock mounting means in said system housing affixed to the bottom thereof;

projector support means extending from said shock mounting means;

securing means for releasably securing the slide projector to said projector support means in a manner whereby said slide projector is selectively adjustable in position relative to said bottom of said system housing and light transmitted from said slide projector is transmitted through said window;

electrically conductive means extending through said system housing and electrically connected to said slide projector

for supplying electrical energy for energizing said projector;

a screen spaced from the front of said system housing for receiving light transmitted from said slide projector and presenting an enlarged reproduction of an image on a slide in the slide tray of said slide projector;

timing means interconnected in said electrically conductive means for controlling the operation of said slide projector to operate the slide tray thereof in a manner whereby slides in said slide tray are positioned for projection of their images onto said screen in a predetermined sequence for predetermined periods of time; and

a power supply housing mounted on said system housing, said power supply housing having first and second spaced opposite walls each with a hole formed therethrough, a disposable dust filter removably mounted in said power supply housing over the hole of one of the first and second walls and an exhaust fan mounted in said power supply housing over the hole of the other of said first and second walls for drawing air out of said power supply housing through said hole of said other of said walls.

4,243,308

EXPOSURE COMPUTATION CIRCUIT

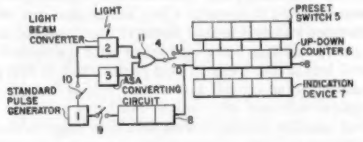
Sadao Yamada; Isao Arita, both of Kawasaki; Tadashi Ito, Kanagawa, and Soichi Nakamoto, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Tokyo Shibaura Electric Co., Ltd., Kanagawa, both of, Japan

Continuation of Ser. No. 746,205, Dec. 1, 1976, Pat. No. 4,139,289, which is a continuation of Ser. No. 521,876, Nov. 7, 1974, abandoned. This application Jun. 29, 1978, Ser. No. 920,254

Claims priority, application Japan, Nov. 8, 1973, 48/125735; Nov. 15, 1973, 48/128652

Int. Cl.³ G03B *17/18*

U.S. Cl. 354—60 E **6 Claims**



1. An exposure indication circuit comprising:

(a) single exposure information forming means for forming an electrical signal corresponding to a preset exposure value, said forming means producing an electrical signal corresponding to a preset shutter time value when the shutter time value is preset and produces an electrical signal corresponding to a preset aperture value when the aperture value is preset;

(b) circuit means for producing an electrical signal corresponding to an object brightness;

(c) computing means having an input part for receiving said electrical signal corresponding to the intensity of light, said computing means being coupled to said single exposure information forming means for producing a first electrical signal indicative of shutter time value by computing the electrical signal from said information forming means and the electrical signal corresponding to the intensity of light when aperture value is preset and for producing a second electrical signal indicative of aperture value by computing the electrical signal from said information forming means and the electrical signal corresponding to the intensity of light when the shutter time value is preset; and

(d) indication means connected to said computing means for displaying at least the shutter time value based on the first electrical signal and for displaying at least the aperture value based on the second electrical signal.

4,243,309

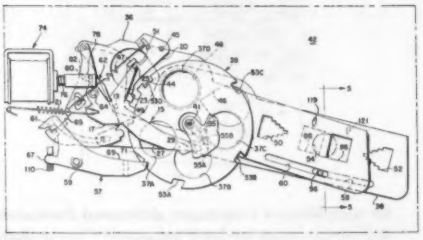
WALKING BEAM LATCH AND LENS DISC ACTUATOR ARRANGEMENT

Bruce K. Johnson, Andover, and George D. Whiteside, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Mar. 5, 1979, Ser. No. 17,196

Int. Cl.³ G03B *3/00, 17/30*

U.S. Cl. 354—197 **7 Claims**



1. A camera having means for defining a focal plane, said camera comprising:

a plurality of discrete lens elements each having a different focal length;

means for holding said plurality of lens elements in circumferentially spaced apart relation with respect to each other for rotation about a center axis, rotation of said lens holding means from an initial position operating to sequentially move each of said lens elements into position to focus an image onto the camera focal plane of a photographic subject located at a different camera-to-subject distance;

a blade mechanism;

means for mounting said blade mechanism for movement between one arrangement in which said blade mechanism blocks scene light from being transmitted to the film plane and another arrangement in which said blade mechanism unblocks the passage of scene light to the film plane;

actuable drive means for displacing said blade mechanism between its said one and other positions to define a photographic exposure interval; and

means for latching said blade mechanism in its said scene light blocking arrangement and for rotatably driving said lens holding means to sequentially move each of said lens elements into its said focus position, said blade latching and lens driving means being movable from one blade mechanism latching position to another blade mechanism unlatching position to enable said drive means to displace said blade mechanism from its said scene light blocking arrangement to its said scene light unblocking arrangement to define said exposure interval, said movement of said blade latching and lens driving means from its said blade mechanism latching position to its said blade mechanism unlatching position simultaneously operating to actuate said lens holding means so as to rotatably drive said lens holding means to sequentially move each of said lens elements into its said focus position.

4,243,310

HIGH SPEED, LOW TEMPERATURE DIAZO PROCESSOR

Peter E. Herborn, Menlo Park, Calif., assignor to Quantor Corporation, Mountain View, Calif.

Filed Apr. 19, 1979, Ser. No. 31,695

Int. Cl.³ G03D *7/00*

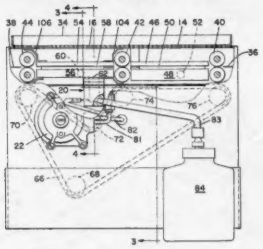
U.S. Cl. 354—299 **14 Claims**

1. A diazo film developing system comprising a first chamber for preheating said film, a second chamber for developing said preheated film, means for heating said second chamber,

means for moving said film through said first and said second chambers,

means defining a cavity adjacent said second chamber for receiving aqueous ammonia in controlled manner, and

thermal control means comprising a heat resistant spacer element connecting said second chamber and said cavity



for maintaining a temperature differential therebetween, said cavity means having a temperature lower than the temperature of said second chamber whereby said aqueous ammonia is vaporized and the ammonia vapor contacts the emulsion of said film, the temperature differential causing the ammonia to separate from the water prior to contact with said film.

4,243,311

IMAGE FORMING APPARATUS

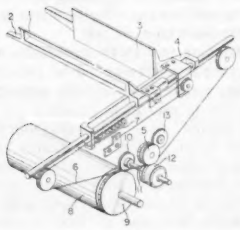
Yoshikuni Tohyama, Yokohama; Yoshimasa Kimura, Kawasaki; Masato Ishida, Yokohama, and Koichi Miyamoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 29, 1978, Ser. No. 937,871

Claims priority, application Japan, Sep. 9, 1977, 52-108574

Int. Cl.[3] **G03G** *15/28*

U.S. Cl. 355—8 **19 Claims**



12. A scanning exposure apparatus comprising:

a scanning exposure means;

means for causing forward and reverse displacement of said scanning exposure means;

means maintained in constant rotation; and

means for controlling the drive force of said displacing means by driving said displacing means with low acceleration at the initial stage of driving, said control means including a plurality of alternatively operable electromagnetic clutches for connecting said displacing means with said rotating means, wherein said control means is adapted to provide a voltage at the initial stage of driving which is lower than that provided during exposure, said voltage being applied to one of the different clutches according to the desired magnification of the exposure;

whereby an initial slip connection and low acceleration of said displacing means may be achieved.

4,243,312

ELECTROPHOTOGRAPHIC COPYING APPARATUS

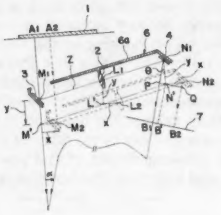
Masaya Ogawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 28, 1978, Ser. No. 946,831

Claims priority, application Japan, Oct. 11, 1977, 52-122107; Oct. 11, 1977, 52-122108; Dec. 19, 1977, 52-153205; Dec. 19, 1977, 52-171196[U]

Int. Cl.[3] **G03G** *15/28, 15/32*

U.S. Cl. 355—8 **17 Claims**



1. An electrophotographic copying apparatus which is capable of copying an original at different copying magnifications, said copying apparatus comprising:

an original supporting surface on which the original to be copied is placed, said original supporting surface being at a stationary original plane;

a stationary projecting plane on which an image of said original is to be projected;

a photosensitive member movable along said projecting plane;

optical means between said original supporting surface and said projecting plane for projecting an image of the original from said original supporting surface onto said photosensitive member, said optical means including an optical unit having a frame with a lens and at least one reflective member attached to said frame to form a single unit, and said optical unit being positioned with the optical axis of said lens at the entry of said optical unit in non-parallel relation to an optical axis of said lens at the exit of said optical unit; and said optical unit being movable from a first position corresponding to a first magnification to a different position corresponding to a second magnification for changing the ratio of the length of said optical axis between said original supporting surface and said lens to the length of said optical axis between said lens and said projecting plane and thereby changing the copying magnification of said image of original projected on said projecting plane.

4,243,313

IMAGE FORMING DEVICE

Shunichi Masuda, Tokyo, and Katsuichi Shimizu, Hoya, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 5, 1978, Ser. No. 966,748

Claims priority, application Japan, Dec. 6, 1977, 52/146928

Int. Cl.[3] **G03G** *15/00*

U.S. Cl. 355—14 R **44 Claims**

1. An image forming apparatus, comprising:

process means for forming an image on a recording member;

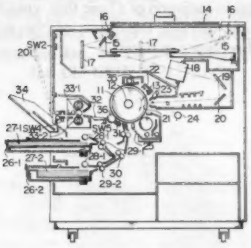
power switch means for supplying power to said image forming apparatus;

setting means for setting instructions for repetitive image forming operations;

first control means for completing the repetitive image forming operations instructed by said setting means, and for storing and indicating a number relating to the image forming operation; and

second control means for turning off the power supply at least for the storing or indicating operation in response to

the turning-off of said power switch means before the start or after the termination of the image forming operation, and for maintaining the power supply for the storing or



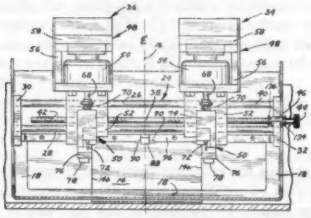
indicating operation despite the turning-off of said power switch means, upon the interruption of the image forming operation caused by trouble in the apparatus.

4,243,314

ADJUSTABLE WIDTH PUNCH MARKING APPARATUS FOR PHOTOGRAPHIC PRINTER

Gerald R. Bowe, Blaine, and James F. Stewart, St. Paul, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Aug. 6, 1979, Ser. No. 64,131
Int. Cl.³ G03B *29/00*
U.S. Cl. 355—29 **9 Claims**



1. In a photographic printer in which a photographic print paper strip is transported along a paper path and is exposed to light from a photographic film original at a print mask location, and in which print mask means located at the print mask location defines first and second transverse masking edges of an exposure area, adjustable indicia producing apparatus for providing indicia at selected locations of the print paper and being adjustable to accommodate print paper strips of different widths, the adjustable indicia producing apparatus comprising:

guide means positioned proximate the print mask location and defining a guide path transverse to the paper path and parallel to the first transverse masking edge;

first and second carriage means movable along the guide path on opposite sides, respectively, of a center line of the paper path slidably supported by the guide means;

carriage positioning means for moving the first and second carriage means along the guide path essentially symmetrically and simultaneously about the center line of the paper path; and

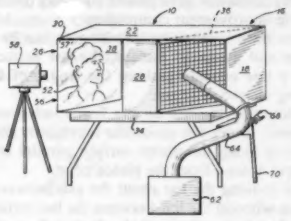
first indicia producing means carried by the first carriage means for providing indicia at selected longitudinal positions as the print paper is advanced along the paper path, the first indicia producing means having a position transverse to the paper path which is adjustable by movement of the first carriage means to accommodate print paper strips of different widths.

4,243,315

DEVICE FOR SELECTIVELY DISTORTING REFLECTED IMAGES AND THE METHOD OF PERFORMING SAME

Clifford R. Wolf, 33 Glacier Dr., Morris Plains, N.J. 07950

Filed Aug. 21, 1978, Ser. No. 935,164
Int. Cl.³ G03B *27/68*
U.S. Cl. 355—52 **19 Claims**



1. A device for producing recordable visual effects in which a selected visual field is to be recorded by a television camera, movie camera, or other recording device, said device comprising:

(a) a housing;

(b) a first mirror secured to said housing, the reflective surface of said mirror presenting the reflected visual field to the recording device; and

(c) a device for distorting said reflecting surface of said mirror so as to provide at least one predetermined area of distortion with reference to the reflected visual field, said device being randomly positionable and movable with reference to said reflecting surface thereby providing predetermined visual distortion at any desired location within said visual field.

16. The process of selectively distorting an image for recording, comprising:

(a) providing an object for recording;

(b) providing means for reflecting the image of the object;

(c) providing means for recording the image;

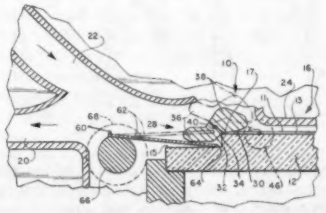
(d) distorting a portion of the reflecting means so as to present a visually distorted part of said reflected image with respect to the remainder of the image without substantially distorting other portions of the image.

4,243,316

REGISTRATION MECHANISM

Gary B. Gustafson, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,542
Int. Cl.³ G03B *27/62*
U.S. Cl. 355—75 **7 Claims**



1. In a copier having a frame, a platen supported by the frame, the platen having an edge and an upper surface, and sheet feeding apparatus mounted on the frame for movement between a first position directly over the platen and a second position away from the platen, the sheet feeding apparatus

when in its first position being effective to move a document sheet across the platen surface (1) in a first direction wherein the leading edge of a document sheet is advanced toward the edge of the platen and (2) in a second direction wherein the leading edge of a document sheet is advanced in the opposite direction and away from the edge of the platen, and the sheet feeding apparatus when in its second position being spaced from the platen by a distance sufficient to allow document sheets, books or the like to be placed manually on the platen for copying, the improvement comprising:

a gate member comprising an elongate bar having a first surface and a second surface, the bar surfaces meeting along a line extending along the length of the bar and defining an obtuse angle;

means mounting the bar on the frame independent of the document feeder for pivotable movement about an axis extending along the platen surface parallel to the platen edge and spaced from the platen edge;

means for moving the bar about the axis between (1) a first position wherein the line between the bar surfaces extends along the platen edge and the first surface of the bar is above the platen surface and defines with the platen surface a small acute angle, and (2) a second position wherein the bar is raised from its first position so that the first and second surfaces are above the platen surface to allow movement of a document sheet along the platen surface and past the edge of the platen in either the first direction or the second direction; and

a sheet deflector comprising an elongate member having a guide surface located alongside the platen, the deflector having an edge at the end of the deflector surface that is adjacent the edge of the platen, the deflector being movable between (1) a first position wherein the deflector edge is beneath the platen edge so that sheets advanced in the first direction past the platen edge pass over the deflector edge and (2) a second position wherein the deflector edge is above the platen edge so that sheets advanced in the second direction over the deflector surface and onto the platen surface pass over the platen edge.

4,243,317

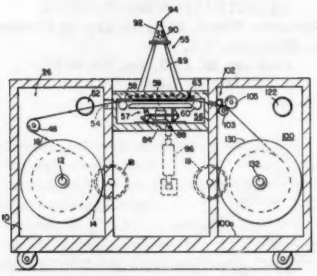
CONTACT PRINTING APPARATUS

William F. Garbe, and Joseph J. Wrobel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 27, 1979, Ser. No. 52,537

Int. Cl.³ G03B *27/20*

U.S. Cl. 355—91 **13 Claims**



1. Apparatus for use in contact printing information from a master record carrier onto a replicate material that emits a gas during the contact print exposure, said apparatus comprising:

means for bringing the master record carrier and replicate material into contact;

an isolating member resistant to stretch and compression disposed so as to be sandwiched between said contacting means and the contacted master record carrier and replicate material, thereby isolating the master record carrier and replicate material from strain forces from said contacting means; and

a source of radiation for making the contact print exposure that does not expose the master record carrier and replicate material to radiation of a type that would cause significant relative thermal expansion of the master record carrier and replicate material.

4,243,318

FLUORESCENCE ANALYSIS OF STAINED PARTICLES

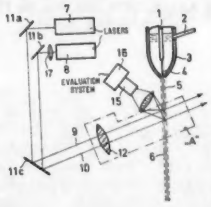
Michael Stöhr, Heidelberg, Fed. Rep. of Germany, assignor to Deutsches Krebsforschungszentrum, Heidelberg, Fed. Rep. of Germany

Filed Jul. 13, 1978, Ser. No. 924,382

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1977, 2732272

Int. Cl.³ G01J *21/64*

U.S. Cl. 356—39 **3 Claims**

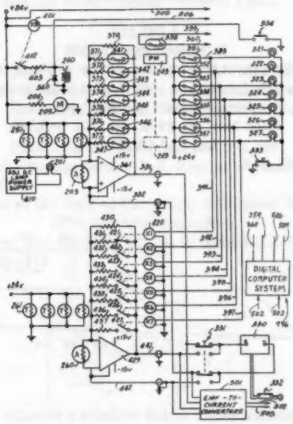


1. In apparatus for effecting fluorescence analysis of particles, dyed with two different dyestuffs in a continuous flow-through procedure, by suspending the particles in a carrier fluid, forming the particle-containing carrier fluid into a sample stream and encasing the sample stream in a sheath stream, conducting the resulting composite stream in laminar flow through an intensive laser light zone where fluorescent light pulses are generated by the laser light and emanate from the particles, and detecting and processing the flourescent light pulses in real time in an electronic evaluation system, the improvement comprising a focussing lens system for producing the laser light zone by focussing at least two laser beams of respectively different wavelengths, each wavelength being matched to a respectively different dyestuff or its fluorescence spectrum, on two points located at the center of the sample stream and spaced at a given distance apart along the path of the particle-containing fluid in the composite stream, said lens system being arranged to direct the laser beams normal to the sample stream with a slight divergence from one another, which divergence determines the spacing between the points at which the beams are focussed, and pivotally mounted deflection mirrors located upstream of said lens system for reflecting the laser beams onto said system and for adjusting the spacing between such points, and wherein said electronic evaluation system comprises means for correlating the fluorescent light pulses emanating from the two points on the basis of the spacing between the two points and of the flow speed of the stream, in order to evaluate only those pulses which correspond to the travel time of individual particles between the two points.

4,243,319
OPTICAL PROPERTY MEASUREMENT SYSTEM AND METHOD

Fred P. Lodzinski, Port Edwards, Wis., assignor to Nekoosa Papers, Inc., Port Edwards, Wis.

Continuation-in-part of Ser. No. 429,637, Dec. 28, 1973, abandoned, said Ser. No. 540,251, said Ser. No. 543,902. This application Jan. 24, 1977, Ser. No. 761,595
Int. Cl.³ G01N *21/17, 21/86*
U.S. Cl. 356—73 **1 Claim**



1. Apparatus for obtaining a quantitative measure of a paper optical property, which optical property is defined on the basis of reflectance measurement alone with specified backing and with respect to a given spectral response function of substantial bandwidth, said apparatus comprising:

(a) an optical measuring device having a receiving region for receiving in operative relation thereto a single thickness of paper sheet material,

(b) said optical measuring device having an optical system with at least two substantially independent photometric sensors and at least partly distinct light energy paths each including at least light source and spectral response filter means and a respective one of said photometric sensors, and each intersecting said receiving region prior to the respective associated photometric sensor,

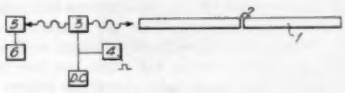
(c) each of said at least two distinct light energy paths having substantially a common spectral response characteristic sufficient to characterize said paper optical property and substantially corresponding to said spectral response function of substantial bandwidth, but being respectively arranged for collecting reflected and transmitted light energy from the receiving region after impingement of the light energy on a single thickness of paper sheet material at said region to provide reflectance and transmittance output signals, and

(d) means (**361, 370–377**) connected with the photometric sensor (**203**) supplying said reflectance output signal for individually calibrating the same to provide a calibrated reflectance measurement correlated with an absolute reflectance of said paper sheet material, and means (**429, 430–437**) connected with the photometric sensor (**260**) supplying said transmittance output signal for individually calibrating the same to provide a calibrated transmittance measurement correlated with an absolute transmittance of said paper sheet material, with said calibrated reflectance and transmittance measurements together essentially characterizing the exclusively reflectance based paper optical property of the paper sheet material, whereby the paper optical property whose definition involves reflectance measurement alone is characterized with substantially greater accuracy than any characterization of said paper optical property by either a reflectance or a transmittance measurement on single thickness sheet material taken by itself.

4,243,320
METHODS FOR TESTING OPTICAL FIBRES

Kevin S. Gordon, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 20, 1979, Ser. No. 22,433
Int. Cl.³ G01N *21/88*
U.S. Cl. 356—73.1 **3 Claims**



1. A method for determining the position of a reflective discontinuity in an optical fibre comprising the steps:

applying the output of an electrical pulse generator to a semiconductor laser to generate a train of recurrent light pulses;

directing the train of recurrent light pulses into one end of the fibre;

monitoring the level of lasing activity in the laser;

varying the pulse repetition frequency of the electrical pulse generator until a frequency obtains at which light pulses self couple into the laser after reflection from the reflectivity discontinuity, the laser then undergoing a marked change in the level of changing activity owing to interference of the reflected light with light being generated within the laser;

successfully halving the pulse repetition frequency obtained;

after each frequency reduction, monitoring the level of lasing activity to determine the lowest frequency, F, at which said change in lasing activity exists; and

thereby determining the distance of the reflective discontinuity from the formula $2L=vT$ where

T is the period at frequency F;

v is the speed of light in the fibre; and

L is the distance between the fibre end and the reflective discontinuity.

4,243,321
HANDY REFRACTOMETER

Minoru Okuda, Akatsukashinmachi, and Mikio Ito, Yokohama, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 27, 1979, Ser. No. 69,925
Int. Cl.³ G01N *21/43*
U.S. Cl. 356—135 **7 Claims**

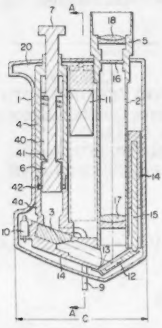
1. A refractometer of the type in which a sample is introduced onto a prism by a pump device, whereafter the sample is illuminated so that the critical angle of the sample is measured, said refractometer comprising:

a substantially rectangular parallelopiped frame member of relatively short length, width and thickness thereof;

a cylinder provided within said frame member in such a manner that the longitudinal axis of the cylinder is parallel to that of said frame member, a piston being slidably disposed at the upper end of said cylinder, the end of said piston being projected from said frame member;

an observation lens barrel disposed laterally within said frame member and in juxtaposed relationship with said cylinder, said lens barrel having an eyepiece portion which is projected from said frame member so as to be in juxtaposed relationship with the end of said piston;

prism holding means for holding said prism adjacent to the lower end of said cylinder within said frame member; and



reflector means for directing a light beam emergent from said prism to said observation lens barrel.

4,243,322

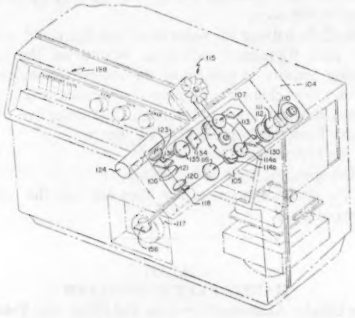
METHOD AND APPARATUS FOR PHOTOLUMINESCENT DETECTION AND MEASUREMENT

Thomas J. Ingalz, San Jose, Calif., assignor to International Diagnostic Technology, Santa Clara, Calif.

Continuation of Ser. No. 703,578. This application Apr. 24, 1978, Ser. No. 899,545

Int. Cl.³ G01N *21/01, 21/09*

U.S. Cl. 356—244 **3 Claims**



1. An apparatus for analyzing a sample by photoluminescent techniques comprising:

a sample being supported as an exposed layer by a surface portion of a carrier member;

test stage means for supporting said carrier member at an analysis location in said apparatus, said test stage means being provided with an elongate slot adapted to removably receive said carrier member, the end of said slot within said test stage having a stop thereat for establishing the fully inserted position of said carrier member, said test stage means further has a means for urging said carrier member toward said stop in the fully inserted position of said carrier member within said test stage;

illumination means forming a first optical system intersecting said analysis location for delivering excitation radiation to the sample surface thereat;

photoluminescent collection means forming a second optical system intersecting said analysis location for receiving photoluminescence emitted from the sample surface thereat;

said illumination means, collection means and test stage means being constructed and arranged whereby the illumination radiation impinges upon said surface to excite the same and said collection means focuses upon said surface to receive radiation emmitted therefrom from the same exposed side; and,

means for supporting said illumination and collection means and said test stage means to form therewith a quiescent enclosure about the sample layer contained therein whereby said sample surface is substantially isolated from conditions external to said enclosure.

4,243,323

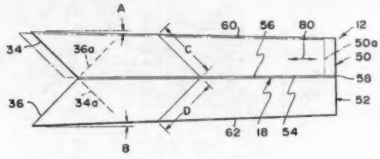
INTERFEROMETER

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of, and James B. Breckinridge, La Canada, Calif.

Filed Nov. 30, 1978, Ser. No. 965,368

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—345 **12 Claims**



8. In an interferometer which includes a detector for detecting the interference pattern formed by combined light beam components, the improvement of a beam splitter device comprising:

first and second optical elements having facewise adjacent surfaces; and

a film of liquid lying substantially between and in contact with said surfaces, and defining the separation between said element surfaces;

said liquid film having a thickness less than 20 microinches, whereby to pa ; a largely uniformly high proportion of light of a range of wavelengths that are directed at said film.

4,243,324

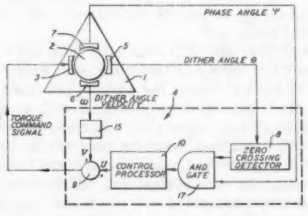
FEEDBACK SYSTEM FOR CONTROLLING LOCK-IN IN SPRING SUSPENDED RING LASER GYROSCOPE

Bernard Friedland, West Orange, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Mar. 21, 1979, Ser. No. 22,557

Int. Cl.³ G01C *19/64*

U.S. Cl. 356—350 **16 Claims**



1. In combination with a spring suspended ring laser gyroscope for providing a gyroscope readout which is proportional to angular input, the gyroscope being suspended by springs from a support;

a torquer for dithering the gyroscope relative to the support in response to a control signal;

means for measuring the optical phase angle of the gyroscope and providing a signal proportional thereto;

means for measuring the movement of the gyroscope relative to the support and providing a signal proportional to dither angle and a signal proportional to dither angular velocity;

a feedback unit for generating a control signal which is a function of the optical phase angle signal, the dither angle signal, and the dither angular velocity signal.

4,243,325

OPTICAL DISTANCE MEASURING INSTRUMENT

Alfons Ernst, Traunreut, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

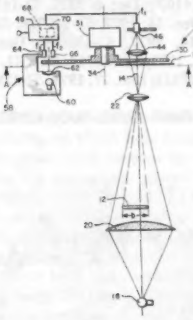
Filed Dec. 20, 1978, Ser. No. 971,249

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758853

The portion of the term of this patent subsequent to Oct. 16, 1996, has been disclaimed.

Int. Cl.³ G01B *11/00, 11/02;* **G02B** *27/17*

U.S. Cl. 356—372 **11 Claims**



1. In a device for measuring a dimension of an object, said device including first means for defining an opaque rotatable disc provided with at least one translucent spiral slit; second means for defining an opaque diaphragm provided with a translucent slit, wherein the diaphragm is arranged to form an overlap zone between the diaphragm slit and the spiral slit, which zone moves along the diaphragm slit as the disc turns; means for generating an image of the object near the diaphragm slit with the dimension to be measured in the region of and substantially parallel to the diaphragm slit; means responsive to the light passing through the overlap zone for generating a measuring signal; and means for evaluating the measuring signal, the improvement comprising:

the spiral slit of the disc is formed substantially in the shape of an involute that proceeds from a base circle centered at the center of rotation of the disc; and

the diaphragm slit is substantially linear and is arranged substantially on a line tangent to the base circle of the spiral slit of the disc.

4,243,326

NICKEL ANALYSIS DEVICE

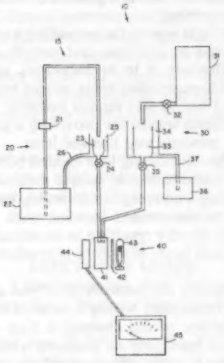
Tin B. Yee, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 4, 1979, Ser. No. 81,998

Int. Cl.³ G01N *21/27*

U.S. Cl. 356—414 **2 Claims**

1. A device for colorimetric analysis of nickel in an acidic chemical plating solution comprising: an automatic measuring system having a first and second automatic measuring system, said first measuring system having a container for holding acidic chemical plating solution, pumping means having an inlet and outlet member, said inlet member connected to said container for receiving said solution, a volumetric cup disposed to receive said solution discharged from said outlet member of said pump, said cup having an inner and an outer section, said inner section being connected to a first means for draining said solution, said outer section disposed for receiving any overflow from said inner section and means connecting said outer cup to said container; said second automatic measuring system having a second container for holding standardized ammonium hydroxide solution and positioned so that flow of said standardized ammonium hydroxide solution is gravity fed, a second volumetric cup having an inner and outer section, means for flow control connected between said second container and said cup, said inner section of said cup being disposed to receive said standardized ammonium hydroxide solution from said second container, said inner section of said cup



having drain means at bottom for draining said standardized ammonium hydroxide solution, said outer section being disposed for receiving any overflow from said inner section and means connecting said outer section to an overflow container for receiving any overflow; a colorimeter measuring system having an absorption cell for receiving a desired solution from said first and second cups, a filter positioned adjacent to said cell, a lamp for providing a source of light positioned adjacent to said filter for receiving and transmitting said source of light, said filter yielding a monochromatic light, near the 580 millimicrons wavelength when said filter is a yellow filter or near 525 millimicrons wavelength when said filter is a green filter, which is transmitted through said absorption cell, a detector and amplifier means positioned on the side of the cell opposite said filter and in line with said light, and an indicator attached to said detector for indicating the amount of light received by said detector through said filter and said cell wherein the nickel content of said chemical plating solution is determined by comparison with detector indication of the amount of said light transmitted through a standard sample.

4,243,327

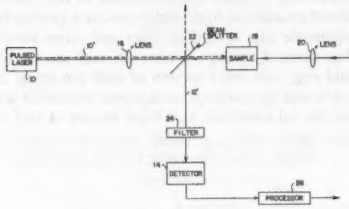
DOUBLE-BEAM OPTICAL METHOD AND APPARATUS FOR MEASURING THERMAL DIFFUSIVITY AND OTHER MOLECULAR DYNAMIC PROCESSES IN UTILIZING THE TRANSIENT THERMAL LENS EFFECT

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Frosch; Jovan Moacanin, Los Angeles; Amitava Gupta, Pasadena, and Sudon Hong, Temple City, all of Calif.

Filed Jan. 31, 1979, Ser. No. 8,211

Int. Cl.³ G01N *21/01*

U.S. Cl. 356—432 **16 Claims**



1. An apparatus for measuring thermal diffusivity of a sample material comprising:

a pulsed laser light source for providing a pulsed laser light beam directed to irradiate said sample material whose thermal diffusivity is to be measured, said pulsed laser light beam characteristics being chosen to cause formation of a thermal lens in said sample material;

a probe light beam source for providing a probe light beam directed to irradiate said thermal lens;

a probe light beam focusing lens located between said probe light beam source and said sample material, said focusing lens providing a converging/diverging beam with a focal point at a predetermined location with respect to said thermal lens thereby resulting in an intensity alteration of said probe light beam as a result of irradiating said thermal lens; and

means for detecting the intensity of at least a portion of said probe light beam after having irradiated said thermal lens during a portion of the dissipation time of said thermal lens, thereby providing an intensity versus time profile related to the thermal diffusivity of said sample material.

4,243,328

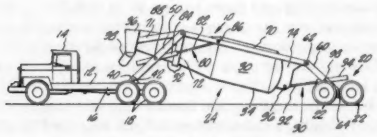
TRAILER TRANSIT MIXER

Evan S. Prichard, Newport Beach, Calif., assignor to Challenge-Cook Bros. Incorporated, Industry, Calif.

Filed Jul. 16, 1979, Ser. No. 57,650

Int. Cl.³ B28C *5/20, 5/42*

U.S. Cl. 366—62 **12 Claims**



1. In a trailer transit mixer for use with a truck having a fifth wheel assembly, the improvement comprising, a mixer drum assembly including a mixer drum and means operatively supporting said drum, a trailer wheel assembly, means supporting one end of said mixer drum assembly on said trailer wheel assembly and selectively operable to shift the longitudinal position of said drum relative to said trailer wheel assembly, means supporting the other end of said mixer drum assembly on the truck fifth wheel assembly and selectively operable to shift the longitudinal position of said drum relative to the truck, the selective operation of said supporting means causing the said other end of said mixer drum to extend over the front of the truck without obstructing movement of the truck, and said other end having an opening and means associated therewith for discharging the contents of said mixer drum beyond the front of the truck.

4,243,329

WATCH MOVEMENT CONSTRUCTION

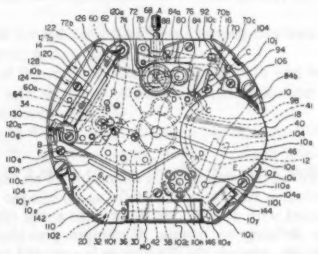
Yasuaki Nakayama, Hanno, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1978, Ser. No. 954,501

Claims priority, application Japan, Nov. 1, 1977, 52-131140; Nov. 24, 1977, 52-141031; Dec. 6, 1977, 52-163592[U]; Dec. 13, 1977, 52-149777; Dec. 13, 1977, 52-149778; Dec. 13, 1977, 52-167283[U]; Dec. 14, 1977, 52-150009; Dec. 14, 1977, 52-168202[U]; Dec. 21, 1977, 52-153714; Dec. 21, 1977, 52-153717; Dec. 23, 1977, 52-155131; Dec. 27, 1977, 52-175179[U]; Mar. 29, 1978, 53-40547[U]

Int. Cl.³ G04B *19/00, 29/04;* G04C *23/04*

U.S. Cl. 368—76 **74 Claims**



1. A movement construction for an electronic timepiece powered by a battery and having an electronic circuit section arranged to provide drive signals indicative of time information, and an electro-mechanical transducer responsive to said drive signals to actuate time-indicating hands adjacent a time dial to display said time information, comprising:

a base plate having its one side fixedly supporting said time dial and having a thickness substantially equal to a thickness of said movement construction, said base plate including a central region and first and second marginal regions;

a wheel train mechanism disposed in said central region of said base plate substantially within the thickness of said base plate, said wheel train mechanism being driven by said electro-mechanical transducer for actuating said time-indicating hands;

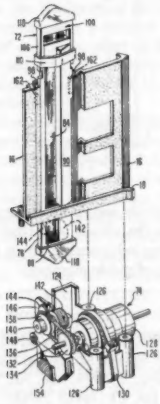
said electro-mechanical transducer being disposed in said first marginal region of said base plate substantially within the thickness of said base plate; and

said electronic circuit section including a circuit substrate and a plurality of electronic components disposed in said second marginal region of said base plate substantially within the thickness of said base plate.

4,243,330
DOT PRINTER ADJUSTABLE ENDLESS LOOP RIBBON CARTRIDGE TRANSPORT APPARATUS

Harry L. Wallace, Livonia; Anthony Horak, Detroit; Frederick G. Krebs, Rochester, and Louis R. Brown, Livonia, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 15, 1979, Ser. No. 3,496
Int. Cl.³ B41J *33/10*
U.S. Cl. 400—194 **3 Claims**



1. A demountable, disposable ribbon cartridge for use with a dot printer for printing on check item documents comprising:

a flat, thin, elongated, rigid member having integral means for deflecting the documents relative thereto, the rigid member including means for guiding a single loop of inked ribbon from end to end thereof;

means, operably associated with the ribbon guiding means, for adjusting the length of the ribbon cartridge effectively placing the ribbon loop under suitable tension for printing therefrom, wherein the ribbon cartridge length adjusting means includes a u-shaped member having a plurality of serrations along a substantial portion of each parallel leg of the u-shaped member and wherein the rigid member is provided with a similar plurality of serrations along the external edges thereof for mating engagement with the serrations of the u-shaped member effective to provide an adjusting mechanism; and

means, integral with the rigid member, for operably positioning the cartridge relative to an associated drive means and to a printing mechanism with which the cartridge is employed.

4,243,331
APPARATUS FOR ADJUSTING A CARRIAGE RELATIVE TO A PLATEN

James G. Savage, Newark, and Brian E. Jagger, Union City, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 28, 1979, Ser. No. 24,804
Int. Cl.³ B41J *11/20*
U.S. Cl. 400—59 **5 Claims**

1. Apparatus for adjusting a carriage assembly in a printing relationship to a platen, said apparatus comprising:

a printing mechanism supported on said carriage assembly and including a print element and a print hammer assembly,

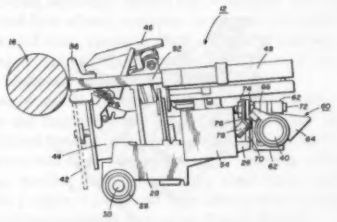
a first support rail located in a first plane,

means for connecting said carriage to said first support rail for linear and rotational movement with respect to said first support rail,

a second support rail substantially parallel to said first support rail,

support means extending from said carriage assembly and oriented in a second plane substantially perpendicular to said first plane,

an elongate tubular housing having opposing normally open ends through which said second support rail is disposed in contacting relatively movable relation, said elongate tubular housing includes at least two trough-shaped depressions of different depths formed at predetermined locations in the outer surface thereof and a cutout portion



forming another depression located at a different predetermined location in the outer surface thereof, and

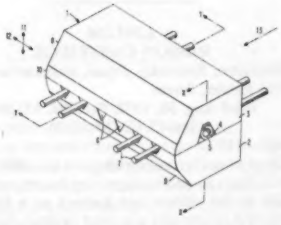
a generally C-shaped member positioned to fit around said tubular housing in a supporting relationship and capable of relative rotational movement therebetween, said C-shaped member being supported from said support means for pivotal movement therefrom in said first plane and supported therefrom for translational movement in said second plane,

whereby the distance between said carriage assembly and said platen is varied upon relative rotational movement between said tubular housing and said C-shaped member.

4,243,332
ELECTRODE GUIDE

Kurt Hartmann, Calw-Heumaden, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,770
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834868
Int. Cl.³ B41J *3/20*
U.S. Cl. 400—119 **3 Claims**



1. A guide for electrodes in a metallized paper printer comprising:

support means having a plurality of parallel grooves in a first surface thereof in which electrodes may be placed;

cover means having a second surface overlying said first surface in mutual contact therewith enclosing the grooves thereof, said cover means having a recess in said second surface transversely of said grooves; and

a resilient tubular element in said recess deformable by the

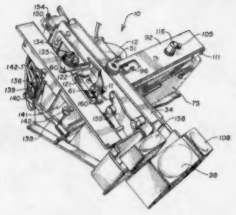
joining of said first and second surfaces to extend into said grooves and engage any electrodes therein.

4,243,333

PRINTING APPARATUS

Franklin C. Bradshaw, St Paul; Thomas P. Connoy, Lino Lakes, and Dennis A. Deutsch, Stillwater, all of Minn., assignors to Kroy Industries, Inc., Stillwater, Minn.

Filed Jul. 7, 1978, Ser. No. 922,566
Int. Cl.[2] B41J *1/28, 3/20, 3/30, 9/26*
U.S. Cl. 400—158 **29 Claims**



1. A dry lettering printing apparatus comprising:
a printing station;
means for providing a color carrying ribbon and an image carrying tape at said printing station;
means for advancing said ribbon and tape into printing alignment at said printing station;
means for providing a raised character into printing alignment at said printing station; and
force generating means for exerting a printing force at said printing station to transfer an image of said raised character from said ribbon to said tape, said force generating means including an elongated print bar pivotally connected at one end to the frame of said printing apparatus and having a printing pad thereon defining said printing station, said force generating means further including a first toggle link pivotally connected between its ends to the frame of said printing apparatus at a first point, said first toggle link including a roller member rotatably mounted near one end of said link at a second point, said roller adapted to engage said print bar and move the same into printing engagement toward said raised character upon pivotal movement of said first toggle link about said first point, said force generating means further including a second toggle link being pivotally connected to the frame of said printing apparatus and a force transfer link extending between portions of said first and second toggle links.

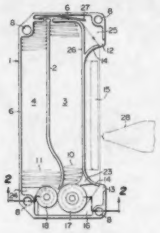
4,243,334

RIBBON CARTRIDGE

Youjiro Shigemori, Shizuoka, Japan, assignor to Star Seimitsu Kabushiki Kaisha, Japan

Filed Aug. 30, 1978, Ser. No. 937,993
Int. Cl.[3] B41J *33/36*
U.S. Cl. 400—247 **5 Claims**

1. A ribbon cartridge comprising: an ink ribbon in the form of an endless loop; an endless tape loop having substantially the same width as the ribbon and formed as a film; a housing including a first cavity and a second cavity which receive the ribbon and the tape, respectively, both cavities being located on the same plane, the housing being formed with a common outlet and a common inlet for both the ribbon and the tape, an outlet passageway for connecting one end of the respective cavities with the common outlet, and an inlet passageway for connecting the other end of the cavities with the common inlet; a pair of guide members for guiding the ribbon and tape across the common outlet and the common inlet in spaced relationship from the housing; a set of rollers disposed within the inlet passageway for receiving the ribbon and the tape from one of the guide members and feeding them into their associated cavities; and friction means disposed in the outlet passageway for feeding the ribbon and the tape to the other guide member from the respective cavities while applying a braking



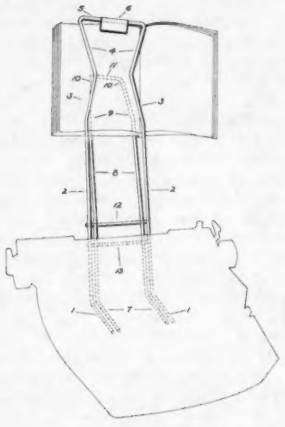
action thereto; said guide members, rollers and friction means coacting to maintain the ribbon and tape in overlapping and face-to-face contacting relationship when the ribbon and tape are between the pair of guide members.

4,243,335

TYPEWRITER COPY HOLDER

Ariel J. Singley, 1715 Spruce St., Napa, Calif. 94558

Filed Jan. 8, 1979, Ser. No. 1,895
Int. Cl.[3] B41J *29/00*
U.S. Cl. 400—718 **1 Claim**



1. A holding device for firmly holding flexible, yieldable information carriers such as paper; soft and solid backed yieldable information carriers such as books, magazines and tablets in a correct straight forward readable position, eliminating light glare, comprising:
a first, upright, outer, taller, metal frame of generally U-shaped configuration having a topmost connecting portion and a downwardly projecting leg extending from each opposite end of said connecting portion, each said legs being provided with identical inward and then outward bends adjacent said connecting portion, said legs then extending generally parallel to each other downwardly to their free ends, said connecting portion being provided with a short oblong metal surface fastened to the connecting portion at the center thereof, a second, upright, metal frame of generally U-shaped configuration, said second frame being shorter and narrower than said first metal frame so as to fit within said first frame, the legs

of said second frame adjacent the connecting portion thereof being provided with an outward bend corresponding to said outward bend of the legs of said first frame, the portion of said second frame adjacent its upmost connecting portion being provided with a rearwardly protruding bend so that said second frame connecting portion lies in a plane rearwardly of the plane of said first metal frame, while the legs of the second frame beyond the said outward bend are parallel to and generally in the plane of the first frame legs, the free ends of the legs of both said first and second frames being provided with a substantially right angle bend out of the plane of the first frame so as to enable the free ends to rest on a support surface and maintain the remainder of said frame in substantially upright position, and wherein

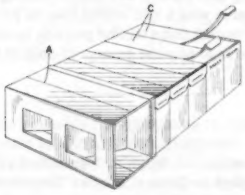
said holding device becomes operational by combining the above mentioned elements, the second said shorter metal frame is set inside first said taller metal frame; by fastening two metal rods across the backs of said frames, leaving a narrow width between said frames, both said frames thus become a common frame allowing the first said frame to remain rigid; the identical inward and outward angle bends on two opposite sides near the top of first said frame serves as stable backing for different sizes and types of yieldable information carriers, the second said frame is allowed to be moved freely back and forth serving as a movable holder and pressure retaining device for the soft and solid backed yieldable information carriers when backings of said carriers are slid between first and second said frames; the one piece plastic magnet holder with handle, a magnetic tape surface fastened to holder serves as a securing device for clamping the flexible, yieldable information carriers in a freely supported reading position when fastened to said short oblong metal surface, the bent free ends of the legs of said first and second frames serve for firm stabilization and proper reading angle alignment of said holding device, eliminating light glare on yieldable information carriers when said holding device is placed under most business machines from the rear.

4,243,336

CONSUMABLE PACKAGE WITH COLLAPSIBLE HANDLE

Robert G. McMullan, Oakville, Canada, assignor to SCM (Canada) Limited, Don Mills, Canada

Filed Feb. 8, 1979, Ser. No. 10,389
Int. Cl.³ A46B *5/02*; B43K *19/14*
U.S. Cl. 401—6 **3 Claims**



1. A handle assembly for a generally rectangular box-like container-applicator for a solid gel paint or adhesive, said handle being disposed at one end of the container and being normally collapsed until the container is to be used, but being expandable so that it can be used as a means for gripping the container at one end thereof by said handle when applying paint or adhesive from the opposite end, said handle comprising in its expanded state, as assembled for use:

a generally U-shaped body of sheet material that has a base portion and two arms extending from the opposite sides of said base portion, each arm having a lip portion capable of being attached to the rectangular box-like container, and two support flaps extending from the base portion capable of engaging a rigidifying V-shaped internal support positioned within the U-shaped body, and

a rigidifying V-shaped internal support disposed within said U-shaped body comprising a central hinge portion and two arms extending from said hinge portion at its opposite sides, said hinge portion being disposed against and secured substantially at the center of the inner face of the base portion of said U-shaped body and extending transversely of said base, the arms of said V-support extending toward the end face of said container and engaging against it, each arm of the V-support having a tab member at the end where the arm portion engages the container, said tab extending internally within the V-support and engaging the end face of said container to support the handle in its expanded state, opposite edges of both of said arms being engaged against the confronting inner faces of the arms of said U-shaped body, and

the base of said U-shaped body being formed with a pair of flaps cut therefrom and hinged thereto, which flaps are projected toward said container, to engage the V-shaped support said flaps being disposed at opposite sides of the hinge portion of said rigidifying sheet respectively, and when projected from said base leaving a pair of openings in said base adapted to receive fingers therein,

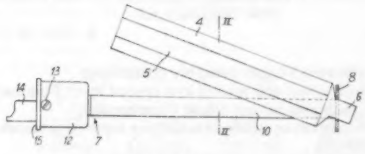
said handle in its collapsed state having said flaps seated in the openings in the base of the U-shaped body, the rigidifying sheet being flattened out and lying against the base portion of said U-shaped body, and the arms of said U-shaped body being accordian-folded, whereby the handle assembly has the appearance of flat sheets disposed at one end of said container.

4,243,337

FOUNTAIN PEN WITH INK REFILL CARRIER

Robert Hocq, Boulogne, France, assignor to Societe Anonyme dite: INTERLIGHT, Villars-sur-Glane, Switzerland

Filed Oct. 24, 1978, Ser. No. 954,321
Claims priority, application France, Oct. 26, 1977, 77 32194
Int. Cl.³ B43K *5/00, 5/14, 11/00*
U.S. Cl. 401—132 **10 Claims**



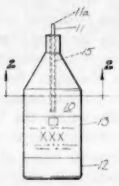
1. An ink refill fountain pen comprising, a body with a writing head at one end thereof and defining an opening at its other end, a removable loading clip adapted to accommodate the ink refill and to be introduced into the body via its open end, and wherein said loading clip comprises, a base plate defining an aperture in which a front, sealed end of the ink refill can be inserted, two strips each connected at one end to the base plate and extending substantially parallel for accommodating and holding the refill between them, and connecting means which connects the other ends of the said strips, said connecting means of the loading clip including a pivotable flap which can be pivoted between an open, raised position and a folded-down position closing the open end of the fountain pen, said flap in its raised position providing manually grippable means for withdrawing the refill.

4,243,338

WRITING INSTRUMENT AND HOLDER ASSEMBLY

James K. Williams, 7 Peasenhall La., Cincinnati, Ohio 45208

Filed Sep. 18, 1978, Ser. No. 943,661
Int. Cl.³ B43K 29/00
U.S. Cl. 401—195 **9 Claims**



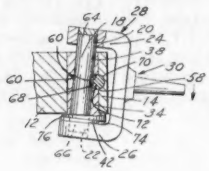
1. A writing instrument comprising a ballpoint pen assembly having a writing tip and an elongated cylindrical ink cartridge, a holder for said assembly having two substantially flat outer surfaces secured in opposed parallel spaced relationship, the spacing of said outer surfaces being such that the thickness of said holder ranges from about 1 to about 4 mm, and a web having an elongated channel enclosed between said outer surfaces in which said cartridge is secured with said writing tip projecting outwardly from said holder, said outer surfaces and said web having a width at least about ten times the thickness of said holder and a length exceeding that of said pen assembly, both said flat outer surfaces having imprinted indicia and the like thereon.

4,243,339

ADJUSTABLE KINGPIN ASSEMBLY

Carroll D. Dickerson, New Hudson, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 9, 1979, Ser. No. 28,626
Int. Cl.³ B62D 17/00
U.S. Cl. 403—4 **10 Claims**



7. An adjustable kingpin assembly comprising;

a yoke with a first and second arm spaced apart from each other, each arm having a hole therethrough;

a knuckle support operably attached to a supportive member of a vehicle;

said knuckle support sized to fit within the space between the two arms and having an aperture extending therethrough and aligned with said holes in the two arms;

a sleeve rotatably fitting within the aperture through the knuckle support;

said sleeve having an aperture extending therethrough from a top opening in the top end to a bottom opening in the bottom end of said sleeve;

said aperture through said sleeve being angled with respect to the axis of said aperture through said knuckle support;

a kingpin sized to extend through said angled aperture and having its ends rotatably received in said holes of said arms of said yoke for rotatably mounting said yoke to said knuckle support;

said sleeve rotatably mounted within said aperture of said knuckle support to angle said kingpin with respect to the normal axis of said aperture through said knuckle support, said kingpin assembly constructed to angle said yoke with respect to said knuckle support for adjusting said camber or castor;

locking means for locking said sleeve in said aperture of said knuckle support for fixedly mounting said yoke at a selected camber or castor with respect to said knuckle support;

said bottom end of said sleeve lying in a plane perpendicular to the axis of said angled aperture such that a top surface of said bottom arm of said yoke is substantially parallel to said end;

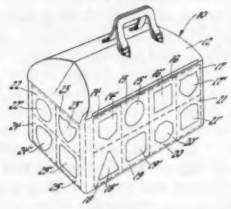
a bearing assembly operably interposed between said bottom end and said top surface of said bottom arm of said yoke.

4,243,340

APPARATUS FOR THE DISPLAY AND PROTECTION OF AWARDS

Donald D. MacGregor, 411 N. Madison, Bay City, Mich. 48706, assignor to Donald Dewayne MacGregor and Jean Ann MacGregor, both of Bay City, Mich.

Filed Jan. 2, 1979, Ser. No. 509
Int. Cl.³ G09F 3/08
U.S. Cl. 40—312 **13 Claims**



1. Apparatus for display and protection of an award comprising a container having at least one wall and having an inner surface and an outer surface, at least one slit formed in said wall, said slit being large enough to allow passage of said award through said slit; a substantially transparent sheet; attachment means securing said sheet to said outer surface of said wall whereby a substantially enclosed pocket is formed between said sheet and said outer wall surface, said sheet being dimensioned so as to substantially overlay at least one of said slits; pocket sealing means secured to said inner surface for selectively sealing said pocket, said pocket sealing means having a first position in which said award may be passed through said slit into said pocket and a second position in which said slit is sealed closed so as to prevent passage of objects through said slit.

4,243,341

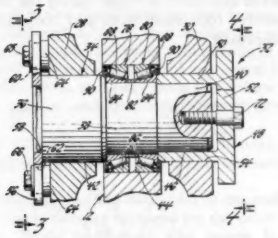
PIVOT CONSTRUCTION

Steve Kabay, Novelty, and Ralph E. Nemecek, Lyndhurst, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 9, 1979, Ser. No. 82,612
Int. Cl.³ F16C 11/00
U.S. Cl. 403—16 **2 Claims**

1. A pivot construction for connecting a pair of relatively movable members, one of said members including a pair of laterally spaced plates and the other of said members being located between said spaced plates, each of said pair of spaced plates and said other member having a circular opening formed therein with the centers thereof aligned along an axis extending transversely to the longitudinal axis of each of said pair of members, a cylindrical pin formed with an enlarged head and a shank portion, said shank portion having a stepped diameter consisting of an intermediate portion and an end portion, a bar

member fixed to the outer end of the enlarged head, the enlarged head being located in the circular opening in one of the plates, means fastening said bar member to said one of the plates, an end cap member having a bore formed therein defined by a cylindrical wall and an end wall, said end cap member being located in the circular opening in the other of said plates and supporting the end portion of said shank, a bearing assembly including a pair of inner race members and a pair of



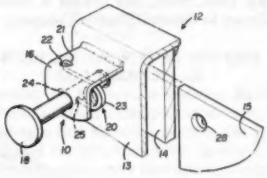
outer race members and tapered roller bearings interposed there-between, said outer race members being fixedly mounted in said circular opening in said other member and said inner race members being supported on said intermediate portion of the shank between said enlarged head and the cylindrical wall of said end cap member, and fastener means connecting said end cap member to said end portion of the shank for preloading said bearing assembly between said enlarged head and said cylindrical wall.

4,243,342

SNAP FAST FASTENER

John H. Marto, Oshkosh, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Jul. 27, 1979, Ser. No. 61,346
Int. Cl.³ F16B *21/00*
U.S. Cl. 403—324 **3 Claims**



1. A fastener assembly for connecting an attachment having a mounting plate to a frame comprising:

a pin holder mounted to a leg portion of said frame;

a latch pin movable through an opening in said frame leg portion for insertion in and engagement with an opening in said attachment mounting plate, said latch pin being secured to said pin holder by torsion spring means;

said torsion spring means including a first leg portion, a coil portion, and a second leg portion, said coil portion being between and integal with said leg portions, said first leg portion being rotatably mounted to said pin holder and said second leg portion being rotatably mounted to said latch pin, said first leg portion is generally "J" shaped and having a curled end portion which is rotatably mounted within an opening in said pin holder, and said second leg portion being elongated and rotatably mounted within a transverse opening in said latch pin; and

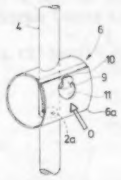
said torsion spring means applying a force to said latch pin when said latch pin is either engaged within said opening in said attachment mounting plate or disengaged from said opening in said attachment mounting plate.

4,243,343

CONNECTOR

Jan H. Wier, "Burleigh" Bulls, New Zealand

Filed Sep. 22, 1978, Ser. No. 944,770
Int. Cl.³ F16B *7/04*
U.S. Cl. 403—397 **9 Claims**



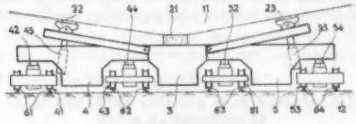
1. A connector for transversely positioning two elongate members in juxtaposition, comprising a shaped strip member being resiliently deformable by compression from a natural position, to a compressed position where its two ends are in juxtaposition; a pair of holes provided through said strip member and adapted to receive a first elongate member therethrough when said body portion is in a compressed position: characterised in that the body portion is constrained against returning to its natural position by the first member when located through the pair of holes, to thereby secure the strip member by a frictional engagement to a required position on the first elongate member; an enclosure being formed in said connector between said first elongate member and the ends of the strip member when in juxtaposition, in which enclosure a second elongate member is locatable so as to be freely moveable both axially and relative to said first elongate member within the limits defined by said enclosure.

4,243,344

INSTALLATION FOR CONVEYANCE OF A BOAT

Maurice Gardon, Abbeville, France, assignor to Delattre-Levivier, Paris, France

Filed May 11, 1979, Ser. No. 38,305
Claims priority, application France, May 31, 1979, 78 16175
Int. Cl.³ B63C *3/08*
U.S. Cl. 405—2 **6 Claims**



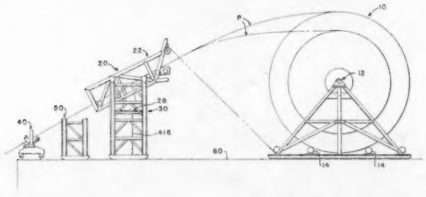
1. An installation for conveyance of a boat including on the one hand trolleys equipped each with a hydraulic jack and roller members and on the other hand parallel supporting-beams which support the boat which is arranged so that its longitudinal axis is perpendicular to these beams which bear each upon the jacks of two trolleys running on two parallel tracks, the jacks forming at least three groups of jacks connected hydraulically so that the resultants of these groups are located at the corners of a triangle, characterized by the fact that it includes at least three parallel tracks upon which the trolleys run which support the supporting-beams which are arranged so as to form at least two lines of beams which are displaced perpendicularly to the longitudinal axis of the boat.

4,243,345

PIPE HANDLING APPARATUS FOR REEL PIPE LAYING SYSTEM

John H. Cha; Wesley A. Brown, both of Orange, Calif.; Harry P. Weldon, London, and Daniel G. Whyte, Amersham, both of England, assignors to Santa Fe International Corporation, Orange, Calif.

Filed Jul. 18, 1979, Ser. No. 58,523
Int. Cl.³ B63B *35/04*; F16L *1/00*
U.S. Cl. 405—168 **19 Claims**



1. In an offshore system for laying a continuous length of pipe on the sea bottom, including a pipe-carrying reel adapted to be mounted on a carrier vessel; reel support means for rotatably mounting said reel to a sufficiently large clear-deck area of said carrier vessel; means for driving said reel in a first direction for spooling pipe onto said reel and for exerting a desired braking action on the reel while unspooling pipe from the reel in a second direction to maintain the unspooled pipe under desired tension; improved pipe handling and conditioning means for working on said unspooled pipe, comprising:

straightener assembly support means adapted to be mounted to the carrier vessel downstream of the reel in the direction of pipe unspooling;

pipe straightening means for imparting a reverse plastic bending moment to the unspooled pipe passing therethrough sufficient to remove at least a substantial portion of the plastic bending moment imparted to the pipe during spooling to thereby substantially straighten the unspooled pipe;

straightener carriage means mounting said pipe straightening means to said straightener assembly support means for movement

(1) about a pivot axis substantially parallel to the rotational axis of said pipe carrying reel,

(2) in a substantially vertical direction relative to the deck of said carrier vessel, and

(3) in a direction substantially parallel to the rotational axis of said reel; and

straightener drive means for driving said pipe straightening means in a direction substantially parallel to the rotational axis of said reel to level wind pipe being spooled onto said reel.

4,243,346

UNLOADER FOR TAKING FEED FROM A HORIZONTAL SILO

Johann Wolf, Scharnstein, Austria, assignor to Johann Wolf Gesellschaft m.b.H. KG, Scharnstein, Austria

Filed Feb. 27, 1979, Ser. No. 15,737
Claims priority, application Austria, Mar. 22, 1978, 2040/78
Int. Cl.³ B65G *53/40*, *25/02*
U.S. Cl. 406—57 **11 Claims**

1. In an unloader for taking feed from a body of silage in a horizontal silo, comprising

conveyor means for conveying feed out of said silo and

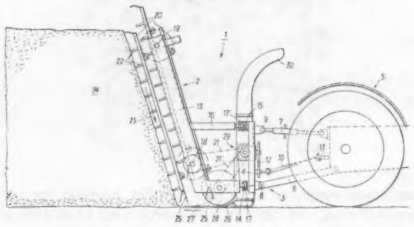
a removing apparatus for detaching feed from said body of silage and for conveying detached feed to said conveyor means, said removing apparatus comprising

two vertically spaced apart, horizontal crankshafts having a plurality of cranks,

a plurality of juxtaposed crank-operated rods, which are pivoted to the cranks of said crankshafts and have one side adapted to face said body of silage,

drive means for rotating said crankshafts in the same sense to move said rods up and down and toward and away from said body of silage,

working tools carried by said rods on said one side thereof and adapted to enter said body of silage and to detach feed therefrom and to move the detached feed downwardly during the downward movement of the respective rods and to leave said body of silage during the movement of the respective rods away from said body; the improvement comprising



a bottom plate extending under all of said crank-operated rods and on said one side and the opposite side thereof and arranged to receive feed which has been moved downwardly by said tools, said bottom plate having one said opposite side a trough-shaped portion associated with said conveyor means, and

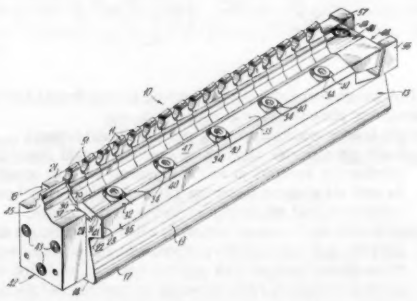
conveying tine means secured to each of said rods at the lower end thereof and adapted to move over in closely spaced relation to said bottom plate at least during part of the movement of the respective rod away from said body of silage.

4,243,347

BROACHING ASSEMBLY HAVING DISPOSABLE CARBIDE INSERTS

Keith A. Clapp, Troy, Mich., and Donald A. Stewart, Boxford, Mass., assignors to General Electric Company, Worthington, Ohio

Filed Feb. 28, 1979, Ser. No. 16,278
Int. Cl.³ B26D *1/12*
U.S. Cl. 407—15 **14 Claims**



1. A broach assembly comprising:

an elongated holder member including: a longitudinal, substantially U-shaped slot for receiving a plurality of cutting inserts, said slot having a support portion and first and second upstanding wall members, each of said cutting inserts having a base, a pair of end walls, and a pair of side walls, one side wall of each insert including a clamping

wall portion extending from said insert base to a point intermediate said one side wall, each clamping wall portion sloping from its insert base towards the other side wall of its respective insert; a clamp support surface sloping downwardly and outwardly from said second slot wall member; and a clamp stop wall extending upwardly from said clamp support surface;

an elongated first clamp member releasably mounted on said clamp support surface and in slideable engagement with said clamp stop wall such that said first clamp member slopes downwardly and outwardly relative to said holder member slot, said first clamp member having a clamping surface disposed adjacent said holder member slot for engaging the sloped clamping wall portion of each of said inserts and exerting a downward and lateral force against said inserts so as to firmly cam said inserts against the support portion and first wall member of said holder member slot;

means for tightening said first clamp member against the clamping wall portions of said inserts and said clamp stop wall;

a stop member mounted to the holder at one end of said slot;

a second clamp member mounted on the other end of said slot for firmly positioning said inserts longitudinally against said stop member; and

means for tightening said second clamp member against said inserts.

4,243,348

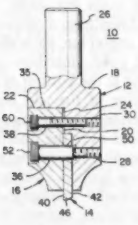
TOOL HOLDER

Earle J. Paige, 1030 Blue Horizon Dr., Deltona, Fla. 32725

Filed Aug. 9, 1979, Ser. No. 65,264

Int. Cl.³ B23B *51/00;* **B26D** *1/12;* **B23B** *31/10*

U.S. Cl. 408—186 **7 Claims**



1. A tool holder for use with a machine tool, the holder comprising a head, a cutter, a clamp member and a first screw, the head including a first shoulder portion, the first shoulder portion having bed surface, the cutter having a first flat, a second flat, a cutting edge, and a first opening formed through the first and second flats, the first and second flats in spaced parallel relation to each other, a first aperture formed through the bed surface, the aperture having an internal shoulder, an upper portion and a lower portion, the upper and lower portions separated by the internal shoulder, the lower portion being tapped, the first screw having a head and shank, the shank including an external shoulder, a top portion and a threaded bottom portion, the external shoulder positioned between the top portion and bottom portion, the clamp member having a face and a first hole formed therethrough, the second flat of the cutter in superposed relation to the bed surface, the first opening of the cutter in axial alignment with the first aperture formed in the bed surface, the face of the clamp member in superposed relation to the first flat of the cutter and the first hole of the clamp member in axial alignment with the first opening in the cutter, the head of the screw in superposed, abutting relation with the clamp member adjacent the hole thereof and the shank of the screw positioned within the first hole of the clamp member, the first opening of the cutter and the first aperture of the first shoulder portion with the top portion of the shank slip engaged with the upper portion of the aperture, the bottom portion of the shank threaded into the lower portion of the first aperture and the external shoulder of the shank in superposed relation to the internal shoulder of the first aperture.

4,243,349

CONTAINERS FOR GOODS

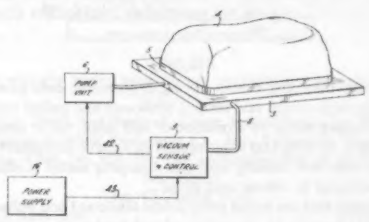
Christopher D. D. Hickey, 5 Heathside, Hinchley Wood, Esher, Surrey, and Harold J. Clements, 20 St. Michaels Close, Harbledown, Canterbury, CT2 9BN, Kent, both of England

Continuation-in-part of Ser. No. 806,101. This application Mar. 13, 1979, Ser. No. 20,015

Claims priority, application United Kingdom, Jun. 14, 1976, 24575/76

Int. Cl.³ B64D *9/00*

U.S. Cl. 410—77 **6 Claims**



1. A container of the kind having a rigid impermeable base and a flexible impermeable cover sealed to the base wherein there is provided a vacuum sensor arranged to sense the difference of pressure between the inside of the container and the ambient atmosphere, means for establishing a partial vacuum inside the container, an electrical energising circuit arranged for actuating said vacuum establishing means, said energising circuit being operatively controlled by the pressure sensor to actuate the vacuum establishing means when the pressure difference is below a predetermined value, means controlled by said sensor to inhibit the operation of the vacuum establishing means when the pressure difference reaches another predetermined value, and a relief valve operatively controlled by said sensor to prevent the pressure difference exceeding said other predetermined value, said sensor comprising a bellows unit arranged to operate at least one mechanically movable contact which controls the electrical energising circuit, the interior of said bellows unit being connected to the interior of the container and said relief valve comprising a resilient diaphragm arranged to close at least one aperture in the movable end of the bellows unit, the diaphragm being constructed to have only a limited travel so that excessive pressure difference causes the bellows to contract and the end of the bellows unit to move away from the diaphragm thereby admitting ambient air into the container through said aperture.

4,243,350

WINCH LOAD FASTENING APPARATUS

Robert E. Hall, 3760 Olmsby Dr., Kent, Ohio 44240

Continuation-in-part of Ser. No. 658,409. This application Feb. 6, 1978, Ser. No. 875,636

Int. Cl.³ B60P *7/08;* **B61D** *45/00;* **B65D** *63/00;* **B66D** *1/04*

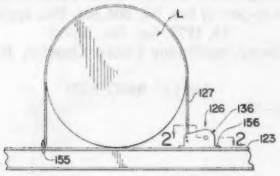
U.S. Cl. 410—100 **3 Claims**

1. A load fastening apparatus for use on a platform and for applying a releasable tension to a strap anchored at the outer end when securing a load carried on the platform, comprising:

a housing for said strap when coiled, said housing having a base element adapted for attachment to said platform, opposed side plates, and a conforming cover plate having an opening therethrough for reciprocal movement of said strap;

a torsion element within said housing providing a torque for strap recoil into said housing;

a unitary elongated rotatable rotor extending transversely of and journaled in said housing and coaxially through said torsion element, said rotor having, (i) means for the connection of the inboard end of said strap thereto, and (ii) means for the connection of said torsion element thereto, and (iii) means for applying a torque thereto from externally of said housing; and,



a strap clamping means having a pivotable cam pawl and through which said strap is tensioned and pulled into said housing solely by a rotation of said rotor, while automatically locking said strap against extractive movement from within said housing until said clamping means is manually actuated to release said strap;

wherein said anchored strap is first tensioned and pulled into said housing by the action of said torsion element on said rotor, and whereby said anchored strap is further tensioned and pulled into said housing by an external torque applied to said rotor.

4,243,351

METHOD OF AND APPARATUS FOR CHARGING A FURNACE

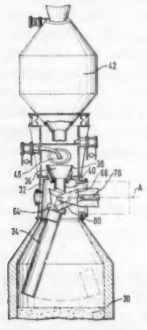
Edouard Legille, Luxembourg; Rene Mahr, Howald-Hesperange, and Pierre Mailliet, Howald, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed May 31, 1978, Ser. No. 911,189

Claims priority, application Luxembourg, Jun. 6, 1977, 77547

Int. Cl.³ C21B *7/20*; F27B *1/20*

U.S. Cl. 414—206 **19 Claims**



1. In a shaft furnace, improved charge distribution apparatus comprising:

elongated distribution chute means;

support means for said chute means, said support means extending through the furnace wall at a single location and being rotatable about a first axis, said support means including a base portion and a pair of arms extending therefrom;

means pivotally coupling said chute means to said support means arms adjacent a first end of said chute means, said coupling means defining a second axis transverse to said first axis, said first and second axes intersecting at a point;

means for rotating said support means to pivot said chute means about said first axis; and

drive means connected to said chute means for imparting motion to said chute means to cause said chute means to pivot about said coupling means defined second axis, said motion imparting means in part extending through the furnace wall at said single location.

4,243,352

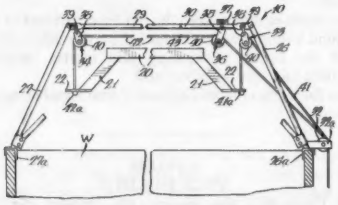
SUSPENSION FOR SILO UNLOADERS

Cary L. Sizelove, and Donald G. Wells, both of Harvard, Ill., assignors to Chromalloy American Corporation, Madison, Wis.

Filed May 10, 1979, Ser. No. 37,906

Int. Cl.³ B65G *65/00*, *1/00*

U.S. Cl. 414—313 **7 Claims**



1. In a silo unloader of the type having a tripod surmounting the wall of a cylindrical silo, said tripod having inwardly and upwardly inclined legs including a main leg and lateral legs at opposite sides of said main leg, cross arms connecting the upper ends of said inclined legs, a suspension sheave adjacent the upper end of each tripod leg, each sheave being journalled in a freely suspended yoke, distribution sheave means journalled in a fixed bracket at the bottom of the main leg, a winch mounted on the exterior of the silo below said distribution sheave means, three suspension cables operatively connected to the winch and trained over the distribution sheave means, each of said cables extending transversely from the distribution sheave means and being trained over one of said suspension sheaves, and a silo unloader mechanism having three effectively horizontal and generally radially extending support arms each of which receives one of said cables to suspend the unloader mechanism in the silo, the weight of the unloader displacing the sheave yokes from the vertical, the improvement comprising:

each of said support arms has an outer end portion which is directly below the suspension point of one of the sheave yokes at the upper ends of the tripod legs, the outer end portion of the arm below the main tripod leg is constructed and arranged for securement thereto of a suspension cable at a first predetermined securement point, and the outer end portion of each of the arms below the lateral tripod legs is constructed and arranged for securement thereto of a suspension cable at another predetermined securement point which is located to compensate for the displacement of the sheave yoke thereabove so as to cause each cable to hang effectively vertically from the sheave over which it is trained.

4,243,353

COTTON MODULE TRANSPORT APPARATUS

Floyd W. Reed, P.O. Drawer O, Glenn Allen, Miss. 38744

Filed Feb. 14, 1979, Ser. No. 12,146

Int. Cl.³ B60P *1/38*

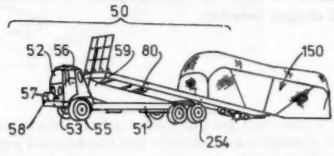
U.S. Cl. 414—439 **5 Claims**

1. A tilt bed trailer with a mobile support therefor, comprising a rigid longitudinally extending wheeled support frame and

a chain bed, the chain bed pivotally attached to the rear portion of said support frame, an extensible piston assembly connected to raise and lower the chain bed relative to said support frame,

the chain bed comprising a longitudinally and transversely extending rigid chain bed frame, a set of toothed link chains and a chain driving assembly, each toothed chain attached at its front end to a drive means therefor, lift wheels rotatably supported on the rear end of said frame and operatively connected to said chains,

the chain bed driving assembly comprising, in operative combination, a rotatable metering wheel, a resilient metering wheel support assembly, a servo control means, and chain power output means, said metering wheel support assembly comprising a rigid assembly support arm, a metering wheel support arm, a tension spring, a pivot shaft, said metering wheel support arm pivotally supported by said assembly support arm, said metering wheel



rotatably supported on said metering wheel support arm, said metering wheel having an axis parallel to the width of said bed frame, said spring means attached to said arm to said wheeled support frame, said metering wheel attached to the input of said servo means, the output of said servo control means connected to said chain output means,

a cleated wheel assembly comprising a plurality of like cleated wheels each supported rotatably on a shaft therefor extending transversely of said frame at the rear end of said frame means, and power means operatively connected to said cleated wheel assembly, power control means connected to said power means, said metering wheel having a path of travel along the path of one of said cleated wheels,

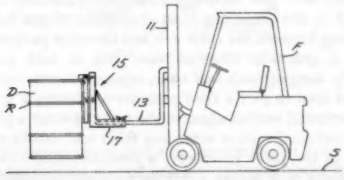
a remote hand control means operatively connected to said power control means, and means connecting said metering wheel and said chain drive whereby the linear movement of said toothed chains along said bed equals the linear movement of said metering wheel.

4,243,354

DRUM LIFTER FOR FORK LIFT TRUCK

Jose M. Garcia, Miami, Fla., assignor to Equipment Company of America, Hialeah, Fla.

Filed May 4, 1979, Ser. No. 35,882
Int. Cl.³ B66F 9/18
U.S. Cl. 414—607 **26 Claims**



1. A drum lifter comprising a base including a pair of parallel spaced fork tubes adapted for receiving at one end and positioning over a pair of vertically adjustable forks of a fork lift truck, and a support plate spanning and secured to the other ends of said tubes;

an upright mount plate supported upon and secured to said support plate;

means fixedly securing said mount plate to said fork tubes;

an upright drum support plate parallel to and arranged forwardly of said mount plate, pivotally mounted intermediate the ends upon said mount plate;

a first arcuate drum grip at the lower end of said drum support plate;

a second arcuate drum grip adjacent the upper end of said drum support plate, said first and second drum grips adapted to operatively engage the exterior of a drum to be lifted and transported;

a forwardly extending latch link pivotally supported upon said mount plate adjacent its upper end, loosely and pivotally mounting said drum support plate;

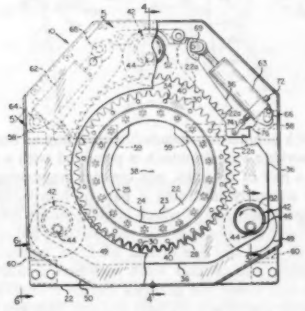
and a third arcuate drum grip depending from the forward end of said latch link adapted to operatively and retainingly engage over and against the interior of said drum.

4,243,355

LIFT TRUCK ROTATOR WITH PRESSURE-RELIEVED VALVING

Ronald A. Brudi, and Daniel F. Chase, both of Longview, Wash., assignors to Brudi Equipment Co., Inc., Longview, Wash.

Division of Ser. No. 928,590, This application Sep. 24, 1979, Ser. No. 78,017
Int. Cl.³ B66F 9/18
U.S. Cl. 414—620 **24 Claims**



1. In a rotator attachment for a lift truck of the type including an inner gear means with external teeth and surrounding outer gear means with a greater number of internal teeth engaging said external teeth, the teeth of both gear means being in surrounding relationship to an axis of rotation, one of the gear means being mounted by rotational mounting means for rotation about said axis for rotating a connected load, the other gear means being mounted by eccentric mounting means to a frame for movement in a gyratory eccentric path about said axis to rotate said one gear means about said axis;

a drive means for moving said other gear means in said gyratory eccentric path comprising:

multiple hydraulic cylinders connected at one set of ends to said frame and at their opposite set of ends to said other gear means at an angular relationship to one another,

position-responsive control valve means responsive to the position of said other gear means in its said gyratory eccentric path for controlling sequentially the flow of hydraulic fluid under operating pressure to said multiple cylinders,

and fluid pressure-responsive relief valve means in association with said control valve means and operable in response to a predetermined excessive fluid pressure in any of said hydraulic cylinders to relieve said excessive pressure and prevent pressure-locking therein,

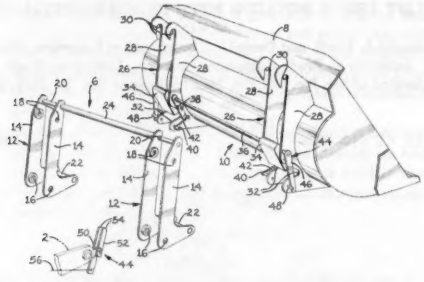
said control valve means including a valve body, a valve

cavity within said body, a rotary valve member within said cavity and coupled to one of said mounting means for rotation therewith, multiple fluid passage means within said body connecting said cavity to a source of pressure fluid and to the opposite sides of said hydraulic cylinders, said rotary valve member being operable upon its rotation to distribute fluid under operating pressure from said cavity sequentially to said hydraulic cylinders through said passage means, said relief valve means being incorporated within said valve member.

4,243,356
QUICK COUPLER

Hyoichi Takojima, Yokohama, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Feb. 5, 1979, Ser. No. 8,983
Claims priority, application Japan, Mar. 30, 1978, 53-036089
Int. Cl.³ E02F *3/81*
U.S. Cl. 414—723 **9 Claims**



1. A quick coupler for detachably attaching an implement to an earthworking vehicle which is provided with a pair of lift arms and a pair of tilt links, said coupler comprising:

a hitch assembly including a pair of transversely spaced hitch members one of which hitch members having upper and lower end portions thereof rotatably linked to one of said tilt links and one of said lift arms, respectively, and the other one of said hitch members similarly having upper and lower end portions thereof rotatably linked to the other one of said tilt links and the other one of said lift arms, respectively, said hitch members each having upper and lower coupling elements respectively in the upper and lower end portions thereof;

a hook assembly fixedly mounted on the back of said implement and including a pair of transversely spaced hook members each having upper and lower end portions, an upper receiving portion in the upper end portion shaped to receive from beneath one upper coupling element of said hitch assembly for engagement with the front, top and rear surface portions thereof and a lower receiving portion in the lower end portion shaped to receive from behind one lower coupling element of said hitch assembly for engagement at least with the front surface portion thereof, a locking member rotatably mounted in the vicinity of the lower receiving portion of each hook member and normally having at least one portion thereof disposed in a normal position interfering with a path of movement taken by said lower coupling element of said hitch member when moved toward said lower receiving portion of said hook member for engagement therewith, said locking member being rotatable into a released position clear of said path of movement when engaging said lower coupling element of said hitch member with said lower receiving portion of said hook member and into a locking position same as or proximal to said normal position as soon as said lower coupling element is engaged by said lower receiving portion of said hook member, said locking member being adapted to be held in said locking position by a force transmitted thereto from said lower coupling element of said hitch member and acting in a direction to disengage said lower coupling element from said lower receiving portion; and

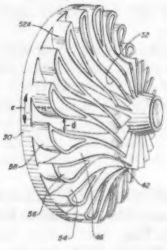
an unlocking mechanism linked to each locking member of said hook assembly to rotate said locking members from said locking position to said released position;

wherein said unlocking mechanism is provided with a stopper member rotatably mounted on said lift arm and including means operable at the operator's station of said earthworking vehicle for rotating said stopper member between a nonoperative and an operative position thereof, the fore end of said stopper member being abutted against said locking member of said hook assembly when moved into said operative position, whereupon said implement is tilted forward to cause said locking member to rotate from said locking position into said released position under the influence of the force applied thereto by the abutment of said stopper member.

4,243,357
TURBOMACHINE

Patrick F. Flynn; Harold G. Weber, and John M. Mulloy, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 936,695. This application Aug. 6, 1979, Ser. No. 63,669
Int. Cl.³ F04D *29/28*
U.S. Cl. 415—215 **16 Claims**



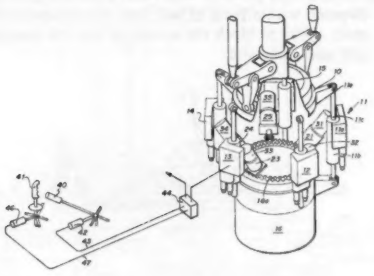
1. A turbomachine for compressible fluids comprising a rotor mounted for rotation about a substantially central transverse axis, said rotor including a hub, and a plurality of vanes mounted on and projecting from one surface of said hub, each vane being between the rotor axis and the rotor periphery and having a generally rounded vane end at said periphery smoothly merging with said vane, adjacent vanes coacting to define at least in part a fluid passageway having a generally axially oriented section adjacent the rotor axis and a generally radially oriented section extending from said axially oriented section to the rotor periphery; a predetermined number of passageways each having a reference station provided with a generally tangentially oriented construction and disposed within the radially oriented section thereof, the passageway configuration at said reference station having a mean tangential dimension that is no more than about 60% of the mean circumference of the rotor measured at said reference station divided by the number of vanes intersecting said circumference.

4,243,358

CONTROL SYSTEM FOR REDUNDANT SWASHPLATE DRIVE

Gaylord W. Carlock, Joshua; William L. McKeown; James R. Goodman, both of Euless, and Chester Skrodzki, Watauga, all of Tex., assignors to Textron, Providence, R.I.

Filed Oct. 11, 1978, Ser. No. 950,456
Int. Cl.³ B64C 27/72
U.S. Cl. 416—114 12 Claims



1. In a helicopter having a rotor driving mast which in turn is driven by a transmission and wherein a swashplate is individually linked to pitch horns on each rotor blade with at least four actuators coupled to said swashplate, three of which normally control the attitude and position of said swashplate, the combination comprising:

(a) a separate power unit for each said actuator, each power unit being independently driven from said transmission; and

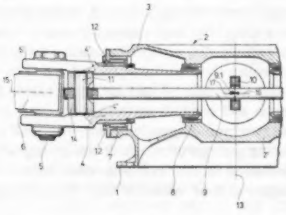
(b) means to shift control of said swashplate from one of said three actuators to a fourth actuator upon said one becoming disabled.

4,243,359

ROTOR STRUCTURE, ESPECIALLY FOR HINGELESS ROTARY WING AIRCRAFT

Alois Schwarz, Putzbrunn; Karlheinz Mautz, Ottobrunn, and Michael Stephan, Munich, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Munich, Fed. Rep. of Germany

Filed Dec. 26, 1978, Ser. No. 972,878
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2801943
Int. Cl.³ B64C 27/48
U.S. Cl. 416—138 5 Claims



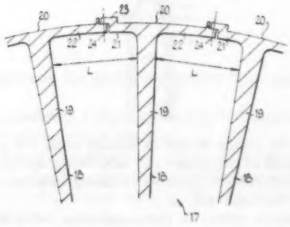
1. A hingeless rotor structure, especially for rotary wing aircraft, comprising at least one pair of rotor blades having a longitudinal blade axis and arranged diametrically opposite each other, rotor head means having an axis of rotation, securing means operatively connecting said rotor blades to said rotor head means, said securing means comprising blade root sleeve means, blade angle bearing means and respective blade angle bearing bushing means, and tensionally resistant, torsionally yielding connecting means including connecting holding means for operatively interconnecting the rotor blades of a pair, bearing means capable of taking up pressure loads in the direction of said longitudinal blade axis operatively arranged between only one of said blade root sleeve means and the corresponding blade angle bearing bushing means, said torsionally yielding connecting means having a center which is displaced radially off-center relative to said axis of rotation toward the respective pressure load bearing means by a distance corresponding substantially to one half of an elongation to which the respective torsionally yielding connecting means are subject in operation, whereby the securing means are centered in a manner substantially free of unbalances which are compensated by the off-center displacement of the center of the torsionally yielding connecting means.

4,243,360

CANTILEVERED STRUCTURES

William B. Wright, Kegworth near Derby, England, assignor to Rolls-Royce Limited, London, England

Filed May 29, 1979, Ser. No. 43,421
Claims priority, application United Kingdom, Jul. 25, 1978, 31023/78
Int. Cl.³ F01D 5/22
U.S. Cl. 416—191 4 Claims



1. A cantilevered structure comprising:

a pair of spaced encastres;

a pair of cantilevers, one cantilever extending from one encastre and the other cantilever extending from the other encastre so that both cantilevers span a gap between said encastres, said cantilevers, when loaded, being arranged so that one cantilever is partially supported by the other cantilever and a load transfer takes place therebetween;

a Youngs Modulus, a cross-sectional shape and an applied load per unit length of one of said cantilevers being the same as a Youngs Modulus, a cross-sectional shape and an applied load per unit length respectively of the other of said cantilevers; and

said load transfer between said cantilevers having a line of action spaced a distance from said encastre of said one cantilever partially supporting said other cantilever in the order of 21% of a distance between said spaced encastres of said cantilevers.

4,243,361

STANDING VALVE ASSEMBLY FOR AN OIL WELL PUMP

Henry C. Groff, Bakersfield, Calif., assignor to Oil Extractors, Inc., Fort Worth, Tex.

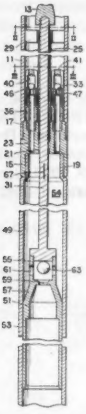
Filed Sep. 20, 1978, Ser. No. 943,965
Int. Cl.³ F04B 21/04, 21/02
U.S. Cl. 417—554 5 Claims

1. An improved apparatus for use with a well pump, the pump being of the type having reciprocating pump means located at the end of a string of production tubing and actuated by a sucker rod within the tubing, the apparatus comprising in combination:

a sub connected to and closing the lower end of the tubing to confine a column of production fluid therein; the sub having a first passage extending axially through the center of the sub and a second passage to the side of and parallel to the first passage;

a single straight metal tube of single-piece construction secured to the sub and extending away from the first passage in alignment with the first passage;

a piston closely and reciprocally received in the tube, the upper end of the piston being connected to the sucker rod for reciprocating the piston in the tube, the lower end of the piston being connected to the pump means for reciprocating the pump means in unison with the piston; the dimensions of the piston and tube being selected so as to seal the hydrostatic pressure resulting from the column of production fluid; and



standing valve means in communication with the second passage for permitting upward flow of production fluid during upstroke of the pump means through the second passage and into the tubing, but preventing reverse flow therethrough during downstroke of the pump means; and

centralizer means secured to the tube above the sub and in contact with the production tubing to maintain it in the center of the production tubing.

4,243,362

COMPOSITE MOLDING APPARATUS FOR ARTICLES FROM TWO MATERIALS HAVING A ROTARY MOLD BLOCK WHICH INCLUDES PINS FOR PROVIDING CORE AREAS

Herbert Rees, Willowdale, and James D. Nevrela, Bramalea, both of Canada, assignors to Globe-Union Inc., Milwaukee, Wis.

Filed Jun. 4, 1979, Ser. No. 45,540
Int. Cl.[3] B29C *1/14;* B29F *1/00*
U.S. Cl. 425—130 **20 Claims**

1. In an apparatus for molding composite articles from two materials, including a stationary first material mold half; a second material mold half disposed spaced from and in parallel facing relation to said first material mold half and movable linearly toward and away therefrom; a mold block disposed between said first and second material mold halves, movable linearly in response to movement of said second material mold half and rotatable about an axis between first and second material mold halves and parallel to their faces; and, two material mold means attached to said mold block and adapted to form, respectively and in response to sequential linear movements of said second material mold half and said mold block and rotary movement of said mold block, a mold closed position including:

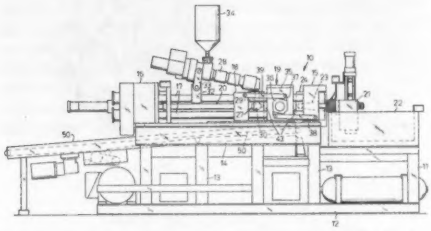
a. a first material-receiving mold cavity with the face of said two material mold means in contact with the face of said first material mold half; and,

b. a two material-receiving mold cavity with the face of said two material mold means in contact with the face of said second material mold half; the improvement comprising:

(1) mold core means movably attached to said mold block and extending through said two material mold means generally perpendicular to its face;

(2) said mold core means having:

(a) an extended position with mold core end portions disposed within parts of said first material-receiving mold cavity to block the receipt of the first material into said parts; and,



(b) a retracted position with said mold core end portions at least partially retracted from said extended position and disposed with said first material within said two material-receiving mold cavity to allow the receipt of the second material into said parts and into the remainder of said two material-receiving mold cavity; and,

(3) indexing means on said mold block for moving said mold core means from said extended position to said retracted position in response to rotation of said mold block and linear movement of said second material mold half and said mold block to the mold closed position.

4,243,363

CONTROL OF TUBULAR FILM SIZE

John J. Mulcahy, Beverly, Mass., assignor to Gloucester Engineering Co., Inc., Gloucester, Mass.

Filed Mar. 12, 1979, Ser. No. 19,486
Int. Cl.[3] B29D *23/04*
U.S. Cl. 425—140 **11 Claims**

1. In apparatus for maintaining a desired circumference of a longitudinally extending thin-wall expanded plastic tube being extruded from an annular die, comprising means for producing a flow of air to establish the volume of the tube, a flow control means to adjust the flow rate of said air, an actuator for said flow control means and control apparatus for said actuator, said control apparatus including at least one tube wall position sensor for producing a circumference-deviation signal dependent upon the deviation in tube circumference from a desired set point, the improvement wherein said control apparatus comprises:

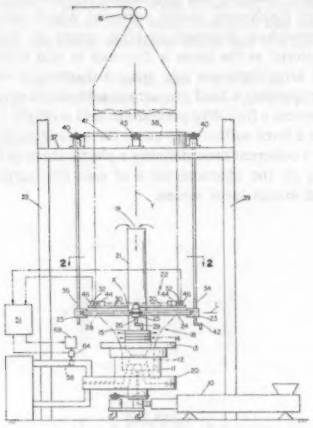
valve position sensing means responsive to changes in actual position of said flow control means for generating a valve position signal that is dependent upon said actual position;

processing means responsive to said circumference-deviation and valve-position signals for generating an error signal dependent upon the difference between said signals;

driving means responsive to said error signal for generating a control signal for driving said actuator,

said sensing means, processing means, driving means, and

actuator thereby defining an inner feedback loop that feeds back valve position to said processing means,



whereby the presence of said inner loop permits said control apparatus to rapidly and stably correct deviations in the circumference of said tube.

4,243,364

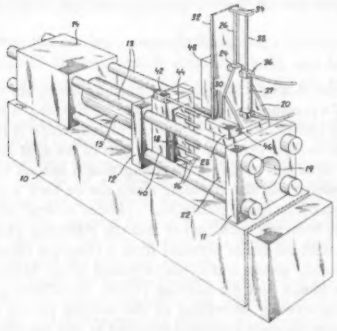
SAFETY MECHANISM FOR INJECTION-MOLDING MACHINE PROVIDED WITH TAKE-OFF MEMBER

Herbert Rees, Willowdale; Paul Brown, Orangeville, and Miroslav Grund, Brampton, all of Canada, assignors to Husky Injection Molding Systems Inc., Bolton, Canada

Filed Nov. 15, 1979, Ser. No. 94,455

Int. Cl.[2] B29C *7/00;* B29F *1/14*

U.S. Cl. 425—153 **5 Claims**



1. In a workpiece-shaping machine provided with a pair of relatively movable holders carrying respective mold portions displaceable between a mold-open position and a mold-closed position, the combination therewith of:

a take-off member adjacent one of said holders provided with drive means for moving same from a retracted position into an inserted position between said mold portions in the mold-open position of said holders for extracting freshly molded workpieces from one of said mold portions; and

lockout means for preventing any significant movement of said take-off member from said retracted position toward said inserted position with said holders displaced from said mold-open position and preventing any significant displacement of said holders from said mold-open position with said take-off member moved out of said retracted position, said lockout means including a control element on the other of said holders with a trajectory intersecting the path of a coacting element on said take-off member.

4,243,365

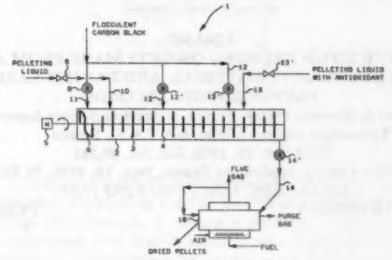
CARBON BLACK PELLET AND METHOD AND APPARATUS FOR PRODUCING SAME

Harold R. Hunt, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 853,715. This application Apr. 20, 1979, Ser. No. 31,704

Int. Cl.[3] B01J *2/10*

U.S. Cl. 425—222 **3 Claims**



1. An apparatus for producing carbon black pellets including:

a housing defining a chamber having first and second ends;

agitating means in said chamber;

means operably connected to said agitating means and operable for effecting operation of said agitating means;

first inlet conduit means opening into said chamber adjacent said first end;

a source of flocculent carbon black connected to said first inlet conduit means;

a first outlet opening into said chamber adjacent said second end;

second inlet conduit means opening into said chamber at a position between the position the first inlet conduit means opens into the chamber and the position the first outlet opens into said chamber;

a source of antioxidant connected to said second inlet conduit means;

third inlet conduit means opening into said chamber adjacent the position the first inlet conduit means opens into the chamber; and

a source of pelleting liquid connected to said third inlet conduit means.

4,243,366

APPARATUS FOR FORMING STARTING TAIL FOR FILM ROLLS

Lloyd E. Lefevre, Bay City, and Mark A. Wegenka, Midland, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

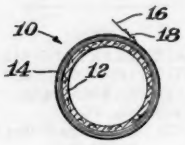
Division of Ser. No. 968,140, is a division of Ser. No. 849,137, Nov. 7, 1977, Pat. No. 4,169,122. This application Sep. 17, 1979, Ser. No. 76,518

Int. Cl.[3] B65C *9/04;* B32B *3/02;* B26D *7/10;* B29C *17/14*

U.S. Cl. 425—303 **3 Claims**

1. An apparatus for on-line forming of an embossed film roll tail, said apparatus comprising a main bed roll acting in combination with a cut-off roll, said main bed roll including an embossing lifting means for raising the film from the surface of the bed roll, the cut-off roll including a cutting means intersecting the lifting means when raised to cut the film passing thereover, a heating means immediately adjacent the cutting means up-

stream thereof, means to engage said lifting means against said heating means to secure the tail end of film therebetween as the



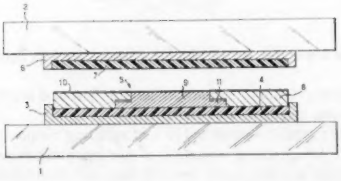
film is severed by the cutting means, and means to wrap the film up on a roll core upon forming of the tail.

4,243,367

DEVICE FOR PRESSING OBJECTS MADE FROM A THERMOPLASTIC MATERIAL, AND PARTICULARLY PHONOGRAPHIC RECORDS

Robert A. Renoux, Poissy, France, assignor to Societe Anonyme de Techniques Audio-Visuelles S.A.T.A.V., France

Filed Oct. 29, 1979, Ser. No. 89,211
Claims priority, application France, Nov. 16, 1978, 78 32344
Int. Cl.[2] B29C *3/00, 17/00;* B29D *17/00*
U.S. Cl. 425—385 **2 Claims**



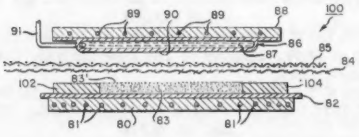
1. A device for pressing objects made from a thermoplastic material, of the type comprising a mould with a die support plate floatably mounted on an elastomer, characterized in that said plate is formed from at least two parts movable in relation to each other, each of these parts supporting a distinct die and bearing separately on the elastomer.

4,243,368

APPARATUS FOR MAKING A STRESS-FREE PLASTIC ARTICLE

Armen Garabedian, 9-22 Astoria Blvd., Long Island City, N.Y. 11102

Continuation-in-part of Ser. No. 647,832, Jan. 9, 1976, and a continuation-in-part of Ser. No. 817,048, Jul. 19, 1977. This application Jul. 31, 1978, Ser. No. 929,304
Int. Cl.[3] B29C *3/00*
U.S. Cl. 425—405 R **8 Claims**



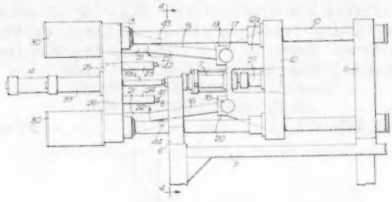
1. Apparatus for producing a plastic sheet from plastic material in comminuted form in which the plastic sheet has on a major face thereof the characteristics of one surface of a master layer, comprising a master layer means on the surface of which there is disposed a layer of plastic material in comminuted form, a micro-porous parting sheet disposed over said comminuted plastic material, an air releasing wire screen sheet disposed over said micro-porous parting sheet, the arrangement thereby forming a multiple layer sandwich which includes said wire screen sheet, said micro-porous parting sheet, said comminuted plastic material, and said master layer means, two flexible spaced diaphragm means between which said multiple layer sandwich is disposed, melting means for heating said plastic material as the latter is disposed in said multiple layer sandwich array between said spaced diaphragm means, and means for applying a fluid pressure to said diaphragm means to evenly impress a fluid-like pressure to said multiple layer sandwich with a force sufficient to cause the melted plastic material to fuse to a coherent mass defining a plastic sheet as said major face takes on the characteristics of said one surface of the juxtaposed master layer means.

4,243,369

MOULD CLOSING, CLAMPING AND OPENING MEANS

Michael J. James, Cheltenham, England, assignor to Micro & Precision Mouldings (Cheltenham Limited), England

Filed Dec. 5, 1978, Ser. No. 966,557
Int. Cl.[2] B29F *1/00*
U.S. Cl. 425—451.2 **14 Claims**

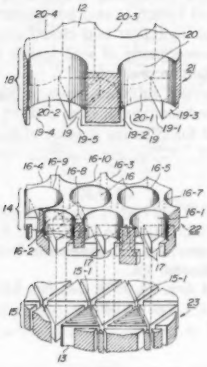


1. Mould closing, clamping and opening means for the split mould of a pressure moulding machine, comprising: a plurality of spaced parallel tie bars; a moving platen which is movable along the tie bars, together with one part of the split mould, to open or close the mould; a clamping platen spaced from the moving platen and also movable along the tie bars; a plurality of hydraulic clamping piston and cylinder means, acting respectively between each tie bar and the clamping platen and supplied with oil under pressure from a common source; further hydraulic piston and cylinder means acting between the clamping platen and the moving platen, for effecting mould opening or closing movement of the moving platen; at least one elongate element pivotally mounted at one end thereof on the moving platen, the opposite end of the elongate element being free; an abutment on the clamping platen; an opening through the clamping platen; and means for pivotally moving the elongate element relative to the moving platen between an operative position in which the free end thereof engages the abutment on the clamping platen, so that the elongate element acts as a strut to transmit a clamping load, applied by said plurality of clamping hydraulic piston and cylinder means, from the clamping platen to the moving platen, and an inoperative position in which the free end of the elongate element registers with said opening through the clamping platen, to permit movement of the moving platen, under the action of the further hydraulic piston and cylinder means, towards and away from the clamping platen during a mould opening or closing operation.

4,243,370
DIE FOR EXTRUDING A HONEYCOMB STRUCTURAL BODY

Noboru Higuchi, Nagoya, and Shoji Futamura, Kawasaki, both of Japan, assignors to NGK Insulators, Ltd. and Institute of Technology Precision Electrical Discharge Works, both of, Japan

Filed Dec. 4, 1978, Ser. No. 966,220
Claims priority, application Japan, Dec. 7, 1977, 52-146906
Int. Cl.³ B29F 3/04
U.S. Cl. 425—462 1 Claim



1. In a die for extruding a honeycomb structural body comprising

discharge slits having a cross-sectional shape corresponding to that of the honeycomb structural body and having a given depth towards the rear surface of the die from the front surface, and

an opening portion having a plurality of openings which are connected to the discharge slits at intersecting portions or side portions thereof, an improvement further comprises

at least one set of a throttle portion having a plurality of openings and a reservoir portion secured to the rear surface of the opening portion in such an arrangement that the reservoir portion is provided between the throttle portion and the opening portion,

the openings in the throttle portion in one set of the throttle portion and the reservoir portion, which set is arranged at the rear side of the opening portion, being larger in diameter and smaller in number than those in the opening portion,

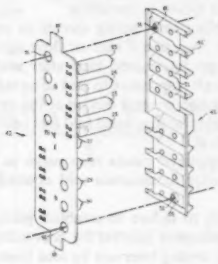
said reservoir portion being constituted with a plurality of guide channels connecting adjacent openings of the throttle portion with one another and the openings in the opening portion;

the discharge slits, the opening portion and at least one set of the throttle portion and the reservoir portion being constructed in monolith, whereby a raw stock flow supplied to the openings in the throttle portion is spread into the guide channels in the reservoir portion, the spread raw stock is fed into the openings in the opening portion and finally, the raw stock flow passed through the openings in the opening portion is extruded through the discharge slits.

4,243,371
FLASH LAMP ARRAY CONSTRUCTION

Norman E. Kewley, Pepper Pike, and Andrew Smetana, Mentor, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 13, 1978, Ser. No. 885,577
Int. Cl.³ F21K 5/00
U.S. Cl. 431—13 6 Claims

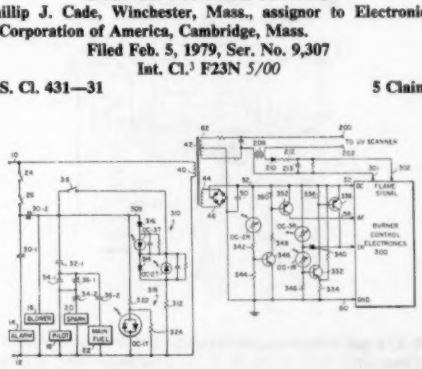


4. A method of making a multiple flash lamp array, comprising the steps of providing a circuit board having flash indicator openings therethrough, providing a plurality of flash lamps and connecting their lead-in wires to said circuit board with the flash lamps extending substantially perpendicularly to said circuit board, providing a reflector unit and positioning same over said circuit board, said reflector unit having flash indicator openings corresponding in position with those of said circuit board, at least one of said flash indicator openings of the reflector unit being provided with a rearwardly extending rim which extends into the respective flash indicator opening of the circuit board, and thereafter bending the lamps by their lead-in wires so that the lamps are substantially parallel to the circuit board and the reflector unit.

4,243,372
BURNER CONTROL SYSTEM

Phillip J. Cade, Winchester, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed Feb. 5, 1979, Ser. No. 9,307
Int. Cl.³ F23N 5/00
U.S. Cl. 431—31 5 Claims



1. Burner control apparatus for use with a fuel burner installation having an operating control to produce a request for burner operation, an air flow sensor which provides an air flow signal to indicate the presence of an adequate air flow through the burner, a flame sensor to produce a signal when flame is present in said fuel burner installation, and means responsive to said burner control apparatus for controlling fuel flow, said burner control apparatus comprising:

a control device for actuating said fuel control means;

an electronic timing circuit for providing an ignition cycle having successive timing intervals including in sequence a

purge interval, a pilot ignition interval, a pilot stabilization interval and a main fuel ignition interval;

means responsive to a request for burner operation to initiate said ignition cycle by actuating said electronic circuit timing means;

air means operative during said ignition cycle for providing an air flow through the burner during said purge interval;

means for disabling said timing circuit to prevent further ignition cycle operation if said air flow signal is present before said air means is operative;

means for disabling said timing circuit to prevent further ignition cycle operation if said air flow signal is not present within a predetermined time after said air means is operative; circuit responsive to said actuated timing means for energizing said control device at the end of said pilot stabilization interval to actuate said fuel control means and initiate fuel flow;

flame signal responsive means responsive to a signal from said flame sensor to maintain said control device energized;

means responsive to failure to establish pilot flame during said pilot stabilization interval for preventing the production of further timing intervals by said timing circuit; and

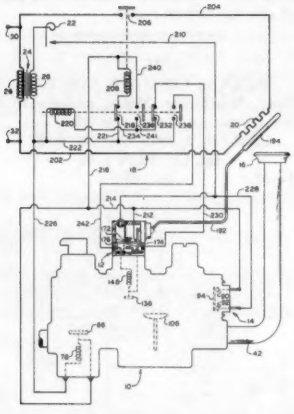
means responsive to loss of said signal from said flame sensor after said pilot stabilization interval to terminate all fuel flow and disable said timing circuit to prevent further ignition cycle operation.

4,243,373

DIRECT IGNITION GAS BURNER CONTROL SYSTEM

Carl F. Fernstrom, and Charles D. Visos, both of St. Louis County, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 9, 1979, Ser. No. 28,338
Int. Cl.[3] F23N *5/00*
U.S. Cl. 431—66 **12 Claims**



1. In a gas burner control system,

a burner;

an electrical resistance igniter for igniting said burner;

a gas valve device including first and second valves connected fluidically in series;

a thermostatically actuated switch means including a switch having a cold contact position and a hot contact position, and including a temperature sensing portion;

said temperature sensing portion being positioned with respect to said igniter so as to cause said switch to be in said cold position when said igniter is below a predetermined temperature sufficient to ignite gas and in said hot position when said igniter is above said predetermined temperature, and being positioned with respect to said burner so as to be impinged by a burner flame for maintaining said switch in said hot position;

first circuit means including said switch in said cold position for effecting energizing of said igniter;

second circuit means including said switch in said cold position for effecting opening of said first valve;

a pressure actuated switch electrically connected in parallel with said thermostatically actuated switch in said cold position and in series with said thermostatically actuated switch in said hot position;

said pressure actuated switch being actuated to a closed contact position in response to gas pressure when said first valve is open for providing a hold-in circuit for maintaining said first valve open; and

third circuit means including relay means, said thermostatically actuated switch in said hot position, and said pressure actuated switch in said closed contact position for effecting de-energizing of said igniter and for effecting opening of said second valve,

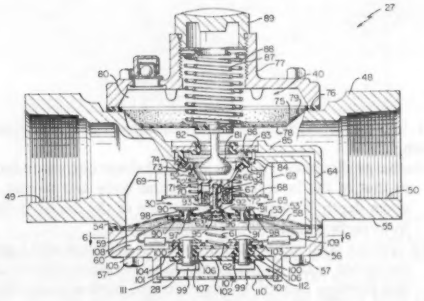
said igniter having sufficient mass to remain above said predetermined temperature for a short time after being de-energized for effecting ignition of said burner.

4,243,374

FLUID FLOW SENSING SWITCH DEVICE AND METHOD OF MAKING THE SAME

Roy C. Demi, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 23, 1978, Ser. No. 936,114
Int. Cl.[3] F23N *1/00*
U.S. Cl. 431—89 **18 Claims**



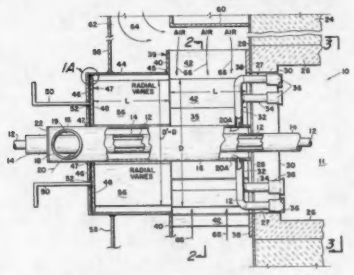
1. In a fluid flow sensing switch device having a self-contained housing means provided with a fluid flow passage therethrough defined by an inlet for receiving a fluid and an outlet disposed in spaced coaxially aligned relation in said housing means and separated by a main valve seat controlled by a movable main valve member that has means adapted to be operated by a pressure differential that is adapted to be created between said inlet and said outlet, said device having an electrical switch construction operatively associated with said main valve member and having contact means thereof adapted to be actuated by said pressure differential, the improvement comprising a pressure regulator disposed in said housing means for regulating the pressure of said fluid that passes from said inlet to said outlet of said housing means, said pressure regulator being disposed downstream from said main valve seat so as to act on said fluid after the same passes through said main valve seat from said inlet, said pressure regulator having a valve seat and a valve member for controlling said valve seat thereof, said valve seat of said pressure regulator and said main valve seat being disposed in spaced coaxially aligned relation in said housing means and substantially transverse to the coaxially aligned inlet and outlet.

4,243,375

GAS OR LIQUID FUEL BURNER WITH AIR REGISTER CONTROL OF TANGENTIAL/AXIAL COMBUSTION AIR MOVEMENT

Robert D. Reed, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Filed Jun. 8, 1978, Ser. No. 913,606
Int. Cl.³ F23C 5/00
U.S. Cl. 431—174 5 Claims



1. A burner system for gaseous or liquid fuel, adapted for insertion through a circular tile opening in a furnace wall; comprising;

(a) a burner tube means to supply gaseous fuel to at least one gaseous fuel burner, and to supply liquid fuel to at least one liquid fuel burner; said burner tube means coaxial with, and inserted into said circular opening;

(b) a first annular vane assembly comprising a pair of spaced coaxial annular plates of substantially equal dimension, a plurality of tangentially-inclined vanes, equally angularly spaced, and rigidly attached in a fixed position to said annular plates at each end, the inner diameter of said tangentially-inclined vanes of selected value D;

(c) said first vane assembly mounted coaxial with said opening to the outer wall of said furnace;

(d) a circular cylindrical wall of selected axial length, and diameter attached to the outer one of said two annular plates; the annular space between said cylindrical wall and said burner tube closed off by a first annular wall;

(e) a second vane assembly comprising a second annular wall adapted to slide about said burner tube and inside said cylindrical wall, and a plurality of angularly and equally-spaced substantially planar radial vanes each located in a plane extending through the axis of the burner tube, rigidly attached in a fixed position at one end axially to said second annular wall, said assembly of diameter less than D;

(f) means to axially move said second vane assembly from and between a first position inside said cylindrical wall to a second position into the space inside said tangential vanes; and

(g) means to force combustion air into the space between said tangential vanes;

whereby when said second vane assembly is in said first position, said combustion air will flow in a swirling helical flow downstream past said burners into said furnace; and

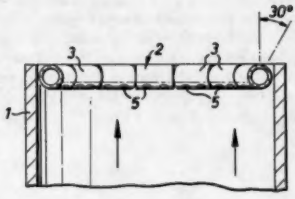
when said second vane assembly is in its second position, said tangential flow of air set up by said tangential vanes will flow into said radial vanes, and will flow axially past said burners into said furnace.

4,243,376

FLARE

Robert A. Cambell, Weybridge, and Rodney E. Witheridge, London, both of England, assignors to The British Petroleum Company Limited, London, England

Filed May 9, 1978, Ser. No. 904,271
Claims priority, application United Kingdom, May 9, 1977, 19290/77
Int. Cl.³ F23D 13/20
U.S. Cl. 431—202 10 Claims



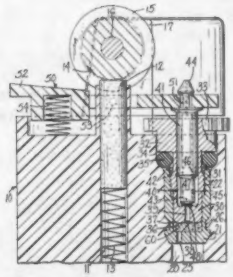
1. A flare comprising a substantially vertically disposed pipe adapted to be supplied with a flow of combustible gas, the pipe having a flame stabiliser comprising a ring within the pipe at or near the outlet of the pipe, the ring being hollow and having a plurality of first holes positioned in said ring upstream of the flow of combustible gas and a plurality of second holes positioned in said ring downstream of the flow of combustible gas, said plurality of first holes and said plurality of second holes being adapted to permit a portion of the flow of said combustible gas through said ring.

4,243,377

FLUID FLOW CONTROL VALVE

Paul Schmid, 71 Lakeview Dr., Milford, Conn. 06460

Filed Mar. 27, 1978, Ser. No. 890,379
Int. Cl.³ F23D 13/04
U.S. Cl. 431—344 8 Claims



1. A fluid flow control device for use in a liquified gas lighter having a body containing a fuel reservoir and a fuel supply passage, comprising:

a cup-shaped stationary member fixed in said fuel supply passage and provided internally with a circular bottom, a fuel vent passage located eccentrically in said circular bottom, a lower cylindrical wall portion and an upper threaded zone, said fuel vent passage being out of contact with said cylindrical wall portion,

a first piston having a bottom end, a lower cylindrical portion slidable in the lower cylindrical portion of the stationary member, a threaded portion engaged with said threaded zone and a manually accessible upper portion, whereby the piston may be rotated to adjust the distance

between its bottom end and the circular bottom of the stationary member,

said first piston being provided with an axially disposed cylindrical chamber and an axially disposed passage traversing the bottom of the piston to connect the cylindrical chamber with a space between said bottom end and circular bottom,

a second piston slidable in said cylindrical chamber and having a burner nozzle at its upper end, a longitudinal passage leading to said nozzle and means at its lower end for selectively obturating the passage in the bottom of the first piston, said longitudinal passage being in fluid communication with said cylindrical chamber,

and a compressible filter mass substantially filling the space between the first piston bottom end and the circular bottom of the stationary member and resting directly against said bottom end and circular bottom.

4,243,378

PROCESS AND DEVICE FOR DISPLACING FIRING PLATES THROUGH A TUNNEL KILN

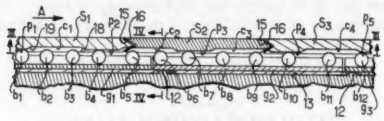
Sten Chronberg, Arnieres-sur-Iton, France, assignor to Agence Nationale de Valorisation de la Recherche (ANVAR), France

Filed Nov. 16, 1978, Ser. No. 961,181

Claims priority, application France, Nov. 22, 1977, 77 35056

Int. Cl.³ F27D *3/11*

U.S. Cl. 432—11 **11 Claims**



2. In a device for ensuring the displacement in tunnel kilns, in particular for high-temperature firing of ceramic products, of firing plates which traverse the kiln while supporting the products to be fired including a row of plates adapted to be pushed at one end of the kiln, a plurality of balls supported in rolling paths on which balls the plates roll, and parallel grooves with the same spacing as that of the said paths formed on the lower face of the plates to receive the balls which simultaneously ensure a lateral guiding of the plates, the said rolling paths being substantially horizontal, the improvement comprising protruded portions formed within said grooves and extending longitudinally therewithin defining skids on which the said plates roll when a ball is present in the rolling path vertically beneath said skid.

4,243,379

SHAFT PREHEATER

Hannes S. Horn, Dortmund, and Heinrich Buchner, Bochum-Weitmar, both of Fed. Rep. of Germany, assignors to Klockner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,631

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1979, 2900078

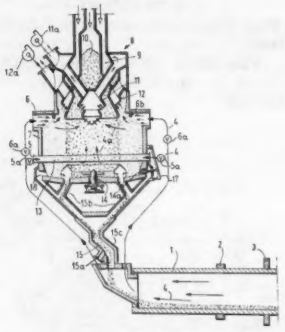
Int. Cl.³ F27B *15/00*

U.S. Cl. 432—14 **18 Claims**

14. The method of preheating separate first and second limestone fractions of different sizes for a rotary kiln or the like, comprising the steps:

feeding the first fraction downwardly forming a core and feeding the second fraction downwardly outwardly annularly surrounding the core;

directing an upper flow of hot gas into the fractions radially to penetrate the outer second fraction and thereafter the inner first fraction with the gas first heating the annular outer fraction;



directing a lower flow of hot gas into the inner core of the first fraction shortly before mixing the fractions so that additional heat energy is directed into the inner core;

and mixing the fractions and directing them to a kiln.

4,243,380

METHOD AND DEVICE FOR DISTRIBUTING LIQUID FUEL TO A FLUIDIZED BED

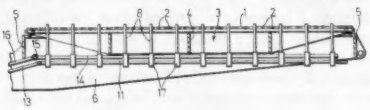
Dag Vareide, Nedre Mollenberggate 83, and Odd E. Solheim, Chatarina Lysholms vei 6B, both of N-7000 Trondheim, Norway

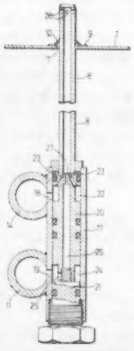
Filed Feb. 16, 1979, Ser. No. 12,748

Claims priority, application Norway, Feb. 17, 1978, 780549

Int. Cl.³ F27B *15/00*

U.S. Cl. 432—15 **2 Claims**





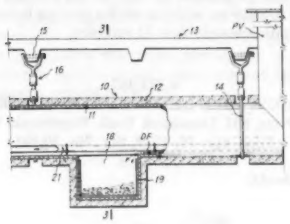
1. A method for distributing liquid fuel in a fluidized bed incinerator having a constriction plate supporting a fluidized bed of refractory particles, said constriction plate having a plurality of tuyeres therethrough for supplying fluidizing and primary combustion air to said bed from a windbox provided below the constriction plate, comprising the steps of:

forming closed pipe loops through which the liquid fuel circulates below said constriction plate;
extending a plurality of substantially vertical risers through the constriction plate;
supplying pressurized liquid fuel in atomized form to said risers at the lower end thereof by means of fuel nozzles connecting each of said risers to the closed pipe loop;
introducing small quantities of a high pressure gaseous driving agent to the risers at the lower end thereof below the constriction plate through one or more driving agent nozzles associated with each fuel nozzle, said driving agent nozzles being in close proximity to the associated fuel nozzle for intimately admixing said supplied driving agent and said supplied fuel at the lower end of the riser and driving the intimate admixture of driving agent and fuel to the fluidized bed through said riser.

4,243,381
CONTINUOUS RING FURNACES

Jean L. Genevois, Corso Sempione 3, Milano; Presti Paolo, Via della Ba³duina 133, Roma, and Giuseppe De Stefani, Via Novara, 55, Abbiategrasso, all of Italy

Filed Mar. 28, 1979, Ser. No. 24,566
Claims priority, application Italy, Mar. 30, 1978, 48681 A/78
Int. Cl.³ F27D *23/00*
U.S. Cl. 432—75 **4 Claims**



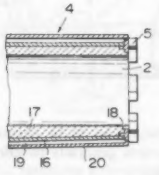
1. Smoke cleaning apparatus for use with a fuel-burning furnace, comprising an elongated tubular smoke channel, means supporting said channel in a position slightly inclined from the horizontal, means connecting the apparatus to a source of products of combustion and heating means in the lower part of the channel adapted to fluidize combustion products deposited therein, whereby said products may flow along the channel, the smoke channel is provided with at least one spaced outlet in its bottom to permit outward passage of said fluidized products, a tank integral with the channel being associated with each outlet and a removable container being fitted within each tank to receive said fluidized deposits.

4,243,382
MATERIAL DISTRIBUTING MEANS FOR ROTARY DRUM TYPE HEAT TREATMENT APPARATUS

Takeshi Suzuki; Mikio Murao; Masahiro Uchida, and Minoru Nezuka, all of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Feb. 9, 1979, Ser. No. 10,799
Claims priority, application Japan, Feb. 10, 1978, 53/14672
Int. Cl.³ F27D *15/02*
U.S. Cl. 432—78 **7 Claims**

1. Rotary drum type heat treatment apparatus comprising a rotary drum rotatable about a longitudinal axis and having an outlet end and a cooling section including grate means having one end disposed beneath the outlet end of the rotary drum for receiving material from the drum, said drum being provided at the outlet end with a plurality of circumferentially spaced distribution members, each of said distribution members having at least one side surface which is extending longitudinally



outwardly beyond the outlet end and inclined with respect to a radial line of the drum for engagement with the material being discharged through the outlet end to deflect the same, said side surface being provided by a plate which is mounted on the drum for angular adjustment about an axis parallel with the longitudinal axis of the drum.

4,243,383
Patent Not Issued For This Number

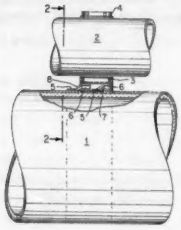
4,243,384
ROTARY KILN

Erik Reinhardt, Copenhagen, Denmark, assignor to F. L. Smidth & Company, Cresskill, N.J.

Filed Apr. 10, 1979, Ser. No. 28,842
Claims priority, application United Kingdom, Apr. 11, 1978, 14121/78
Int. Cl.³ F27D *15/02*; F27B *7/02*; F27D *1/00*
U.S. Cl. 432—80 **17 Claims**

1. A rotary kiln having a plurality of cooler tubes arranged in a planetary fashion therearound, the cooler tubes being supported by a ring-shaped member disposed and spaced radially from the kiln, the ring-shaped member being attached to the kiln by a plurality of support members for supporting said ring-shaped member, at least one of said support members having first and second flange means, said first flange means being attached to inner surface portions of the ring-shaped member, said second flange means being attached to outer

surface portions of the kiln, and an intermediate web member connecting said first and second flange means, said support



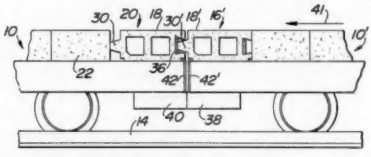
members being arranged so as to permit movement of the cooler tubes in directions generally parallel to the longitudinal axis of the rotary kiln.

4,243,385

END BLOCK

Ernest H. Jeffries, Jr., Greensboro, N.C., assignor to Resco Products, Inc., Norristown, Pa.

Filed Feb. 26, 1979, Ser. No. 15,038
Int. Cl.³ F27D 3/12
U.S. Cl. 432—241 **2 Claims**



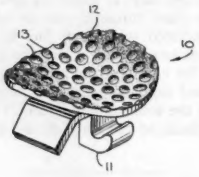
1. Apparatus comprising a kiln car, a row of end blocks aligned adjacent an end of said car, each of said end blocks comprising a refractory body having a horizontal transverse recess extending into a face of said block adjacent said end of said car, said recess having a shape wherein the innermost surface of said recess has a vertical dimension greater than the vertical dimension of any other portion of said recess, said row being formed of blocks wherein said recess of each block is aligned with said recess of each adjacent block, and a layer of resilient refactory material retained in said recesses of said blocks without the use of fastening means by retaining means comprising said shape of said recess, said refractory material having a length sufficient to be threaded through all of said recesses, and further comprising one other row of end blocks aligned adjacent an opposite end of said car, each of said end blocks of said other row comprising a refractory body having a horizontally transverse projection extending from an end face adjacent said opposite end of said car and vertically aligned with said recess, the smallest vertical dimension of said recess being greater than the largest vertical dimension of said projection.

4,243,386

ORTHODONTIC APPLIANCE

Kozo Kawaguchi, Ohkuma, Japan, assignor to GAC International, Inc., Commack, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,062
Int. Cl.³ A61C 7/00
U.S. Cl. 433—9 **10 Claims**



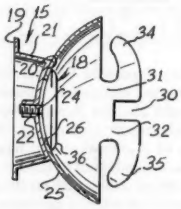
1. An orthodontic appliance adapted to be adhered directly to the surface of a tooth which comprises an orthodontic bracket suitable for supporting a wire, and a base member connected to the lower portion of said orthodontic bracket and forming a flange extending from said lower portion of said bracket, said base member having in the rear surface thereof a plurality of indentations which extend into the thickness of said base member but do not protrude onto the other surface thereof, said indentations including a sufficiently roughened surface to facilitate a locking relation with an adhesive so as to enable said appliance to be directly adhered to the surface of said tooth, said roughened surface having a finish of approximately 6 to 10 microns in depth with a spacing between irregularities of approximately 5 to 13 microns.

4,243,387

ADJUSTABLE ORTHODONTIC BRACKET

Steven P. Prins, 531 Tomahawk Trail, Woodstock, Ga. 30188

Filed Apr. 16, 1979, Ser. No. 30,101
Int. Cl.³ A61C 3/00
U.S. Cl. 433—16 **4 Claims**



1. An orthodontic appliance comprising at least one bracket carried by a tooth, and a wire fixed to said bracket for exerting a force on said bracket so that the force is exerted on the tooth, characterized in that said bracket includes a base fixed with respect to said tooth, a force receiving member selectively receivable on said base and movable with respect thereto, said force receiving member defining means for receiving said wire, retainer means for selectively fixing said force receiving member with respect to said base, said force receiving member defining an opening therein, said retainer means including a shank receivable through said opening and engageable with said base, said force receiving member being selectively rotatable about said retainer means for changing the angular position of said means for receiving said wire, and further characterized in that said base includes a concave surface for receiving said force receiving member, said force receiving member includes a convex surface complementary to said concave surface, and said opening is generally central of said force receiving member, the arrangement being such that said means for receiving said wire can be angularly disposed with respect

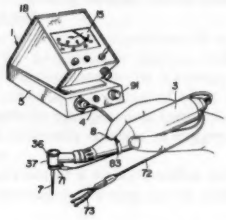
to said base by motion of said force receiving member with respect to said base.

4,243,388

DENTAL HAND ENGINE

Toshio Arai, Tokyo, Japan, assignor to Kabushiki-Kaisha Dentronics, Tokyo, Japan

Filed Apr. 20, 1979, Ser. No. 32,241
Claims priority, application Japan, Apr. 20, 1978, 53-52345
Int. Cl.³ A61C *1/00*
U.S. Cl. 433—27 **1 Claim**



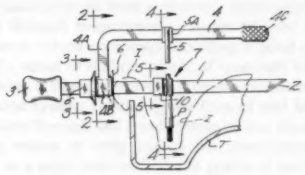
1. A dental hand engine for driving a reamer for widening a root canal of tooth, which comprises a body containing the engine and operable by fingers, switch means provided on said body for selectively operating the engine and the reamer connected to said engine, means for passing a micro current through the reamer, and electric circuit means for sensing electric resistances of the micro current passing through the reamer and for stopping the engine and reamer in response to a specific electric resistance said micro current has when the reamer reaches a radical apex.

4,243,389

DENTAL DOWEL PIN PLACEMENT APPARATUS

Jeffrey W. Eisner, 464 W. Shenandoah, Roseburg, Oreg. 97470

Filed Dec. 11, 1979, Ser. No. 102,380
Int. Cl.³ A61C *19/00*
U.S. Cl. 433—74 **6 Claims**



1. An apparatus for retaining a dowel pin in partial embedment within a settable jaw reproduction cast within a dental impression, said apparatus comprising,

an elongate base for supported engagement adjacent its ends with the impression,

a guide for base installation carried by said base and positionable above a tooth impression,

a dowel pin holder supported by and positionable along said base into alignment with the desired dowel pin location whereat the lower portion of the dowel pin will be subsequently embedded in the jaw reproduction, and

indicator means positionable along said base to mark the desired location of said dowel pin holder when the latter is reinstalled on the base after impression and jaw reproduction vibration.

4,243,390

PROCESS FOR DYEING OR PRINTING FIBROUS MATERIAL USING QUATERNARY POLYMERIZED AMMONIUM SALTS AS ASSISTANTS

Paul Schäfer, Riehen; Hans-Ulrich Berendt, Allschwil, and Jaroslav Haase, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,115

Claims priority, application Switzerland, Dec. 29, 1978, 13278/78

Int. Cl.[3] C09B *67/00;* D06P *1/62*

U.S. Cl. 8—553 18 Claims

1. A process for dyeing or printing organic fibrous material using a dyeing or printing assistant which contains, as quaternary ammonium salt,

(a) a reaction product of a copolymer of maleic anhydride and ethylene, propylene or styrene, with a N,N-disubstituted 1,2-ethylenediamine or 1,3-propylenediamine, in which the substituents are alkyl of 1 to 4 carbon atoms or together with the nitrogen atom form a 5- or 6-membered ring which optionally contains an oxygen atom as second heteroatom,

(b) a homopolymer of a 4-vinylpyridine which is unsubstituted or substituted at a ring carbon atom by methyl or ethyl,

(c) a copolymer of the above vinylpyridine and styrene, and the reaction product (a), the homopolymer (b) and the copolymer (c) are quaternised with an alkyl or alkenyl halide containing up to 6 carbon atoms alone, or with a halomethylnaphthalene, halomethyldiphenyl, chloroacetamide, chloroacetonitrile, or with a haloacetic acid or an alkali metal salt or alkyl ester of haloacetic acid containing 1 to 12 carbon atoms in the alkyl moiety, or with a benzyl halide which is unsubstituted or substituted by halogen, methyl or ethyl, alone or in admixture with each other or with an alkyl or alkenyl halide containing up to 4 carbon atoms, or

(d) a homopolymer of a 2- or 4-vinylbenzyl chloride which is quaternised with a tertiary monoamine containing up to 20 carbon atoms, whilst two substituents of the monoamine are alkyl of 1 to 4 carbon atoms or together with the nitrogen atom form a 5- or 6-membered ring which optionally contains an oxygen atom as second heteroatom, and the third substituent of the monoamine is alkyl, alkenyl or aryl containing up to 18 carbon atoms which is unsubstituted or substituted by alkyl or alkylene.

4,243,391

PROCESS FOR BLEACHING TEXTILES IN THE MECHANICAL LAUNDRY DRIER

Rolf Puchta, Haan; Karl Schwadtke, Leverkusen; Hans Harder, and Rudolf Weber, both of Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 945,439

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1977, 2744457

Int. Cl.[3] D06L *3/02, 3/14, 3/16*

U.S. Cl. 8—111 13 Claims

1. A process for bleaching textiles in a mechanical laundry drier consisting of the steps of adding a sufficient amount of an aqueous hydrogen peroxide solution and an aqueous solution of a textile softening quaternary ammonium salt dispersible in water to previously washed textiles before heating the same, so that the residual moisture adhering to the textiles contains from 0.05 to 1 gm/liter of hydrogen peroxide and from 0.05 to 2 gm/liter of said textile softening ammonium salt, heating said damp textiles under mechanical agitation and hot air flow in such a manner that the temperature of said damp textiles is from 55° C. to 80° C. for a period of at least 5 minutes, and recovering dried, bleached textiles.

4,243,392

PROCESS FOR SOLAR CONCENTRATION OF LITHIUM CHLORIDE BRINE

Patrick M. Brown, Exton, and Daniel A. Boryta, Downingtown, both of Pa., assignors to Foote Mineral Company, Exton, Pa.

Filed Apr. 11, 1979, Ser. No. 28,976

Int. Cl.[2] B01D *1/00, 9/02*

U.S. Cl. 23—295 S 6 Claims

1. In a process for producing a relatively concentrated solution of lithium chloride from a relatively dilute solution of such compund through evaporation by means of solar energy, the improvement which comprises providing a pond system consisting of a series of shallow ponds of relatively large surface area, flowing a dilute solution of lithium chloride into one end of said pond system, regulating the flow of said lithium chloride solution through said pond system so that through evaporation by means of solar energy the concentration of said solution, at a point intermediate the points of introduction to and withdrawal of said solution from said pond system, is increased to provide a solution whose concentration has a vapor pressure which under ambient conditions is substantially in equilibrium with the partial pressure of moisture in the atmosphere at the geographic location of said pond system, and further regulating the flow of said more concentrated lithium chloride solution through the remainder of said pond system so that through solar energy the temperature of said solution for at least a substantial portion of the daylight hours exceeds that of the air immediately above said pond system, whereby the vapor pressure of said solution exceeds the partial pressure of moisture in the atmosphere above said pond system and additional water is thereby evaporated from said solution to increase further the concentration of lithium chloride in said solution.

4,243,393

COAL ARTICLE

Miles W. Christian, Plymouth, Ohio, assignor to Banner Energy Corporation, Plymouth, Ohio

Filed Oct. 13, 1977, Ser. No. 841,937

Int. Cl.[3] C10L *5/36*

U.S. Cl. 44—14 12 Claims

1. A restructured coal article comprising a tube-like formation of coal, said tube-like formation of coal having a hollow core and relatively easily burnable igniter material at least substantially filling said core, said igniter material being capable of producing sufficient heat to ignite the article substantially completely along the inner surface of the wall circumscribing said hollow core.

3. A restructured coal article comprising a tube-like formation of coal having an axis, a hollow core and opening means in said formation extending radially relative to such axis through from said core to the outer surface of the article for enabling air flow to enter said core and for increasing the surface area from which volatile gases may issue from the article thereby to facilitate obtaining burning over substantially the entire length of the article.

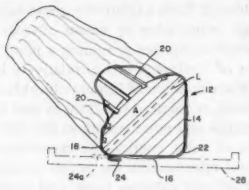
5. A restructured coal article comprising a tube-like formation of coal, the outer surface of said tube-like formation of coal being generally cylindrical and the interior surface of said tube-like formation of coal having rib-like protrusions in the same, each of said protrusions having a sharp edge extending longitudinally along the length of the article and the inner wall of the article circumscribing said hollow core including circumferential portions separating respective adjacent protrusions along the longitudinal extent of the article.

4,243,394

PIE SEGMENT SHAPED FLAMMABLE ARTIFICIAL FIRELOG

Thomas R. Kincaid, Sacramento, Calif., assignor to DG Shelter Products Company, Sacramento, Calif.

Filed Feb. 14, 1979, Ser. No. 12,210
Int. Cl.³ C10K *5/36*
U.S. Cl. 44—14 **7 Claims**



1. An artificial composite flammable firelog of generally pie segment shaped transverse cross section formed by two generally flat elongate substantially perpendicular intersecting sides and a third elongate curved side of predominantly convex configuration.

3. The firelog of claim 1 together with a wrapper surrounding all sides of the firelog in which the wrapper is at least partially flame retardant in the portions of the wrapper adjacent to both of the flat sides.

4,243,395

METHOD FOR PRECISION GRINDING OF HARD, POINTED MATERIALS

Anil R. Dholakia, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 13, 1979, Ser. No. 48,166
Int. Cl.³ B24D *3/34*
U.S. Cl. 51—293 **7 Claims**

1. In a method of lapping the tip of a hard material having a sharp point to provide a flattened tip of a predetermined length comprising the steps of

rotating a substrate having an abrasive layer of amorphous SiO_x thereon, said abrasive layer formed by a glow discharge of a silicon compound, and

contacting the abrasive layer and the tip,

the improvement which comprises using an abrasive layer that is thick enough such that the tip can not penetrate through the abrasive layer to the underlying substrate.

4,243,396

HUMIDIFIER SEPARATOR

Richard A. Cronenberg, Ramsey, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Continuation of Ser. No. 856,397, Dec. 1, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,127
Int. Cl.³ A61M *11/02*
U.S. Cl. 55—238 **6 Claims**

1. A hand size separator for a medical fluid dispenser system for supplying inhalable fluids, the system including a liquid source, a gas source and supporting structure, the separator comprising:

means for connection to a source of gas;

means for connection to a source of liquid;

a hollow inner member having a helical radial surface extending outwardly therefrom;

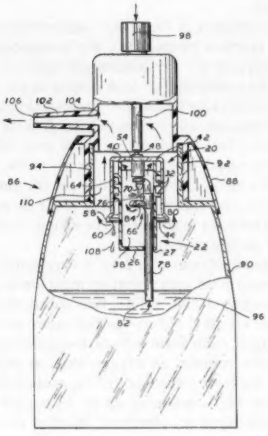
an outer casing surrounding a portion of the inner member and the helical radial surface extending into engagement with the inner surface of the outer casing so as to form a tortuous passageway therebetween communicating with an opening to the exterior of the separator;

a nozzle mounted within the hollow interior of the inner member and positioned to be in communication with the means for connection to a source of gas and means for connection to a source of liquid so that when the separator is connected to a source of gas and a source of liquid gas will be directed by the nozzle to aspirate liquid and cooperate therewith to form a desired mixture of liquid and gas;

surfaces on the inner member and the outer member forming a passageway between the hollow interior of the inner member and the exterior thereof so that the mixture of gas and liquid produced within the inner member is directed into engagement with the helical radial surface between the inner and outer members and the mixture passes along the tortuous passageway in the separator in contact with the radial surface whereupon the larger droplets of liquid are removed from the mixture for drainage through the opening to the exterior of the separator leaving a remaining mixture of desired consistency to be supplied to a patient;

the separator being mounted in a liquid container to form a nebulizer or humidifier for introducing therapeutic fluids to a patient;

the liquid container having an inlet section and an outlet section;



the inlet section having means thereon for removable connection to a source of gas and the liquid container having a reservoir of liquid therein forming a source of liquid;

the nozzle of the separator positioned in the liquid container in communication with the liquid therein and positioned with respect to the inlet section so that gas entering the container is directed to the nozzle through the means on the separator for connection to a source of gas thereby permitting the nozzle to aspirate liquid from the container and cooperate in formation of a mixture of liquid and gas;

the separator being positioned in the liquid container in a position so that the mixture of desired consistency communicates with the outlet section of the container for passage therethrough for transmittal to the patient;

the liquid container including a hollow base for housing the liquid with an open top end and a removable cap coupled with the open top end of the base, the separator being removably mounted in the cap, the inlet section being located in the cap; and

the separator being positioned in the container so that the separated drops of liquid exiting from the tortuous path will fall by gravity through the opening to the exterior of the separator and drain into the reservoir of the liquid container for reuse.

4,243,397

AIR CLEANER WITH REPLACEABLE FILTER ELEMENT

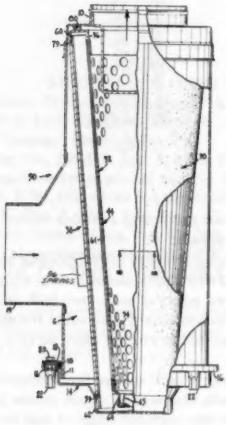
Joseph C. Tokar, Apple Valley, and Frank A. Janezich, Richfield, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 898,906, Apr. 24, 1978. This application Jun. 27, 1979, Ser. No. 52,552

The portion of the term of this patent subsequent to Jul. 8, 1997, has been disclaimed.

Int. Cl.[3] B01D *50/00*

U.S. Cl. 55—487 4 Claims



1. An improved filter element assembly for use in an air cleaning device having a filter body which defines a filter chamber, said filter element assembly being releasably contained in said filter body, wherein said filter element assembly comprises:

(a) an elongated perforated liner assembly, said liner assembly being made from a material which is sufficiently durable to enable said liner assembly to be reused during successive air cleaning operations over the life of the air cleaning device;

(b) a disposable and elongated filter element which includes a filter medium having a plurality of pleats, said filter medium being made from a material which is substantially porous to air and substantially nonporous to predetermined particulate matter suspended in the air, whereby said filter medium removes the particulate matter from the air;

(c) locking means for releasably coupling said filter element to said liner assembly with said filter medium surrounding said liner assembly in a face-to-face relationship, whereby said filter element may be detached from said liner assembly when said filter medium becomes plugged with the particulate matter to allow said liner assembly to be reused; and

(d) an elongated porous outer liner surrounding and engaging said filter medium, wherein said outer liner has means for applying a radially inward force to said filter medium to press said pleats into engagement with said liner assembly.

4,243,398

METHOD OF PRODUCING DIELECTRIC DIFFRACTION GRATINGS OR DIELECTRIC MULTILAYER INTERFERENCE FILTERS

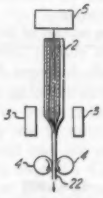
Hidenori Nomura; Hiroshi Honmo, and Shigeo Matsushita, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 2, 1979, Ser. No. 8,979

Claims priority, application Japan, Feb. 9, 1978, 53/14428; Mar. 2, 1978, 53/24097; Mar. 2, 1978, 53/24101; Jun. 28, 1978, 53/78973

Int. Cl.[3] C03B *37/00*

U.S. Cl. 65—2 3 Claims



1. A method of producing dielectric diffraction gratings comprising

(a) depositing films of two kinds of glass which differ in refractive index alternately at a given period on the inside wall of or around a tubular or rod-shaped starting member, thereby producing a tubular preform,

(b) cutting said preform diametrically, thereby producing a flat member,

(c) heating and drawing said flat member until the thickness of said films of glass is reduced to a desired value, and,

(d) cutting said drawn member into minute pieces of diffraction gratings.

4,243,399

METHOD OF PRODUCING A COUPLING ELEMENT FOR AN OPTICAL TRANSMISSION FIBER

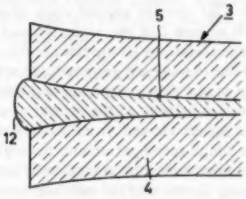
Giok D. Khoe; Robert G. Gossink, and Cornelis M. G. Jochem, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1978, Ser. No. 913,293

Claims priority, application Netherlands, Jun. 10, 1977, 7706379

Int. Cl.[3] C03B *23/09*

U.S. Cl. 65—4 B 3 Claims



1. A method of producing a coupling element used for coupling a radiation source in the form of a laser to a monomode optical transmission fiber, said fiber having a glass core material and a glass cladding material, wherein the method comprises the steps of:

selecting the glass core material and the glass cladding material such that at a temperature, known as the flattening temperature, the core material has a viscosity of between 10^7 and $10^{8.5}$ poises and the cladding material has a viscosity of between 10^{10} and 10^{11} poises;

heating the optical transmission fiber to the flattening temperatures; and

monotonically flattening the fiber so that the end of the core has an elliptical cross-section;

whereby the core material emerges from the cladding during flattening and the emerged portion assumes, under the influence of its surface tension, a semi-ellipsoidal form which, on cooling, becomes a fixed lens coupling element on the end of the core.

4,243,400

APPARATUS FOR PRODUCING FIBERS FROM HEAT-SOFTENING MATERIALS

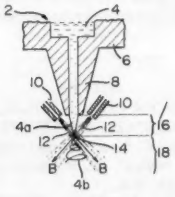
Nobuyoshi Ohsato; Keihachiro Tanaka, and Eiji Mizushima, all of Itami, Japan, assignors to Nippon Sheet Glass Co., Ltd., Japan

Division of Ser. No. 715,648, Aug. 18, 1976, Pat. No. 4,135,903. This application Nov. 7, 1978, Ser. No. 958,444

Claims priority, application Japan, Aug. 20, 1975, 50-101618

Int. Cl.³ C03B *37/06*

U.S. Cl. 65—16 **19 Claims**



1. An apparatus for producing fibers from a glass material, said apparatus comprising a melt crucible having flow-out nozzles of 0.5–2.5 mm in effective hole diameter of heating a glass material to form a viscous melt and flowing said melt continuously through said flow-out nozzles; and a gas jet comprising at least 3 jet nozzles around each of said flow-out nozzles in which at least 2 of the angles formed between the central axial lines of adjacent jet nozzles are from 95° to 135°, the central axial line of said each gas jet nozzle not crossing the central axial line of said flow-out nozzle and being positioned in the same direction relative to the central axial line of said flow-out nozzle when viewed from each gas jet nozzle, whereby at least 3 high-speed gas streams having a component which gradually approaches the central axial line of the melt toward the flowing direction of the melt and a component in a direction which then gradually departs from said central axial line are formed, and by these high-speed gas streams, said melt is rotated around its central axial line and formed into a substantial conical shape in which the cross section gradually decreases toward the direction of flow in a first zone which ranges from the flow-initiating part of the melt to the part at which the gas stream most closely approaches the central axial line of the melt, and in a second zone subsequent to the first zone, the melt is allowed to fly in a fibrous form from the tip of the conical shape in a vortex form in the direction of flow and outwardly in the radial direction.

4,243,401

APPARATUS FOR PRODUCING DOUBLE-WALLED HEAT INSULATING CONTAINERS

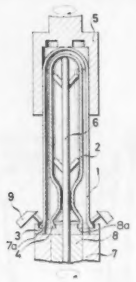
Franz Guenthner, Mainz, Fed. Rep. of Germany, assignor to Jenaer Glaswerk Schott & Gen., Fed. Rep. of Germany

Filed Apr. 18, 1979, Ser. No. 31,188

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1978, 2818259

Int. Cl.³ C03B *23/13*

U.S. Cl. 65—153 **9 Claims**



1. An apparatus for producing a double-walled heat insulating container, comprising:

a first clamping chuck means for supporting an open-ended inner bulb, said first chuck means having a support surface for the open end edges of said inner bulb and an expandable mandrel means axially moveable through a bore in said support surface to engage inner surface areas of said inner bulb;

a second clamping chuck means for supporting an open-ended outer bulb, said second chuck means having a support surface for the open end edges of said outer bulb, said second chuck means support surface being arranged concentrically with the first chuck support surface;

gripping means positioned away from said second chuck support surface and being pivotally moveable toward said second chuck support surface for gripping outer edge portions of the outer bulb adjacent the open end thereof against said second chuck support surface;

a third clamping chuck means spaced apart from said first and second chuck means and coaxially aligned with said first and second chuck means for supporting said outer bulb on the opposite end from the open end thereof; and

a heating-deforming means positioned between said third and said first and second chuck means and being selectively moveable at least toward and away from said first and second chuck means.

4,243,402

APPARATUS FOR MEASURING TEMPERATURES IN MOLTEN METAL

John E. Sensi, Arnold, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

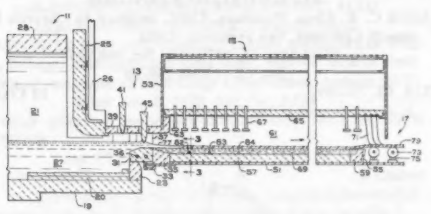
Filed Sep. 13, 1978, Ser. No. 941,879

Int. Cl.² H01L *35/02*; C03B *18/02*

U.S. Cl. 65—29 **23 Claims**

1. Apparatus for measuring temperatures below the surface of liquids comprising temperature sensing means, high density weighting means and woven material impervious to said liquid surrounding said temperature sensing means and said

weighting means with the proviso that said woven material comprises a fabric having fibers of a material selected from the



group consisting of ceramic fibers, carbon fibers, metal fibers and mixtures thereof.

4,243,403

3-ISOTHIAZOLONES

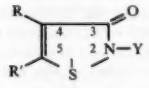
Sheldon N. Lewis, Willow Grove; George A. Miller, Glenside, and Andrew B. Law, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 368,168, Jun. 8, 1973, Pat. No. 4,105,431, which is a continuation-in-part of Ser. No. 836,660, Jun. 25, 1969, Pat. No. 3,761,488, which is a continuation-in-part of Ser. No. 672,437, Oct. 3, 1967, Pat. No. 3,523,121, which is a continuation-in-part of Ser. No. 621,280, Mar. 9, 1967, abandoned. This application May 30, 1978, Ser. No. 910,730

Int. Cl.[3] **A01N** *43/78;* **E05B** *67/38*

U.S. Cl. 71—67 **8 Claims**

1. A coating composition with or without a pigment which comprises a film-forming agent, a solvent or carrier, and a compound of the formula



wherein

Y is an unsubstituted or substituted alkyl, alkenyl, or alkynyl group of 1 to 18 carbon atoms, an unsubstituted or substituted cycloalkyl group having a 3 to 6 carbon atom ring and up to 12 carbon atoms, an unsubstituted or substituted aralkyl group of up to 10 carbon atoms, or an unsubstituted or substituted aryl group of up to 10 carbon atoms,

R is hydrogen, halogen or a (C_1–C_4)alkyl group, and

R′ is hydrogen, halogen, or a (C_1–C_4)alkyl group, or a salt of a compound of the above formula with a strong acid,

said compound being present in an amount which is effective to adversely affect the growth of bacteria, fungi, or algae.

4,243,404

1,2,3-THIADIAZOLE-3-IN-5-YLIDENE-UREA DERIVATIVES, PROCESS FOR MAKING THE SAME AND COMPOSITIONS CONTAINING THE SAME HAVING GROWTH REGULATING ACTIVITY FOR PLANTS

Hans-Rudolf Krüger; Friedrich Arndt, and Reinhart Rusch, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

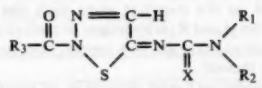
Filed Apr. 4, 1978, Ser. No. 893,357

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1977, 2716324

Int. Cl.[3] **A01N** *47/36;* **C07D** *285/06*

U.S. Cl. 71—73 **54 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or C_1–C_2 alkyl;

R_2 is C_1–C_4 alkyl, C_5–C_8 cycloalkyl, or phenyl or pyridyl optionally substituted in one or more positions by the same or different substituents selected from the group consisting of C_1–C_4 alkyl, C_1–C_4 alkoxy, halogen, nitro and CF_3;

R_3 is hydrogen, C_1–C_{18} alkyl which may also be substituted by halogen or phenyloxy, C_1–C_6 alkoxy, C_3–C_8 alkenyl, C_3–C_6 alkenyloxy, C_3–C_6 alkinyloxy, C_5–C_8 cycloalkyl optionally substituted by one or more C_1–C_6 alkyl, C_1–C_4 alkylthio, an aromatic residue selected from the group consisting of phenyl, naphthyl, phenylthio, phenyloxy and phenylalkyl, having up to two carbons in the alkyl moiety, said aromatic residue being optionally substituted in the aromatic moiety by one or more substituents which are the same or different and are selected from the group consisting of C_1–C_2 alkyl, C_1–C_6 alkoxy, halogen, nitro and CF_3, furyl, or an amino group of the formula

wherein R_4 and R_5 are the same or different and are hydrogen or C_1–C_6 alkyl, phenyl, optionally substituted by one or more substituents which are the same or different and are selected from the group consisting of C_1–C_6 alkyl, C_1–C_6 alkoxy, nitro, halogen and CF_3; and

X is oxygen or sulfur.

53. A composition having growth regulating activity for plants, the said composition comprising about 10 to 80% by weight of the active agents of claim **1**, about 90 to 20% by weight of the liquid or solid carrier material in which latter percentage there may be included 20% by weight of surface active agents.

54. A process for defoliating plants and/or increasing the formation of off-shoots, the said process comprising applying to the plants a composition as defined in claim **53**.

4,243,405

FUNGICIDAL COMPOUNDS

Sugavanam Balasubramanyan, Wokingham, and Margaret C. Shephard, Maidenhead, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 19, 1977, Ser. No. 826,263

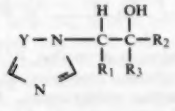
Claims priority, application United Kingdom, Aug. 19, 1976, 34590/76; Sep. 1, 1976, 36152/76; Nov. 16, 1976, 47667/76; Feb. 8, 1977, 5139/77; Jun. 2, 1977, 23443/77

The portion of the term of this patent subsequent to Jul. 14, 1995, has been disclaimed.

Int. Cl.[3] **A01N** *43/50, 43/64, 55/02;* **G07D** *249/08*

U.S. Cl. 71—76 **55 Claims**

1. A compound having plant fungicidal and/or plant growth regulating activity and the formula



wherein Y is =N—, R_1 is allyl or is benzyl optionally ring substituted with one or two substituents selected from the class consisting of halogen, C_{1-4} alkyl, halo (C_{1-4} alkyl), C_{3-6} cycloal-

kyl, nitro, cyano, C_{1-4} alkoxy and (C_{1-4} alkylene)dioxy, and/or optionally substituted on the α-carbon atom with one C_{1-4} alkyl, R_2 is propyl or butyl and R_3 is hydrogen or methyl; or an alkanoate ester, an acid addition salt or a copper, zinc, manganese or iron complex thereof.

29. A method of combating fungal diseases in, or regulating the growth of, a plant, the method consisting essentially of applying to the plant, to seed of the plant or to the locus of the plant or seed, a fungicidally or plant growth regulating effective amount of a compound, ester, salt or metal complex as claimed in claim **1**.

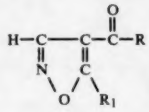
4,243,406

5-ARYL-4-ISOXAZOLECARBOXYLATE-SAFENING AGENTS

Lawrence H. Brannigan, Olivette; John E. Franz, Crestwood, and David E. Schafer, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1978, Ser. No. 973,413
Int. Cl.[3] **A01N** *43/26, 37/22, 37/24*
U.S. Cl. 71—88 **43 Claims**

1. A composition comprising a herbicidally effective amount of an alpha-haloacetanilide herbicide and an effective safening amount of a compound having the formula



wherein R is selected from the group consisting of hydroxyl, lower alkoxy, lower alkoxyalkoxy, lower alkoxyalkoxyalkoxy, lower haloalkoxy, amino and halogen; and R_1 is selected from the group consisting of phenyl and phenyl substituted with up to three groups individually selected from the class consisting of lower alkyl, lower alkoxy, lower haloalkyl, nitro and halogen.

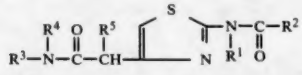
4,243,407

2-ACYLAMINOTHIAZOL-4-YLACETAMIDES AS POST EMERGENT SELECTIVE HERBICIDES

Roger P. Cahoy, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Division of Ser. No. 937,290, Aug. 28, 1978. This application Aug. 23, 1979, Ser. No. 69,026
The portion of the term of this patent subsequent to Oct. 17, 1995, has been disclaimed.
Int. Cl.[3] **A01N** *43/78*
U.S. Cl. 71—90 **7 Claims**

1. The method of selectively combating unwanted vegetation which comprises applying to the locus of the unwanted vegetation an effective amount of a selectively phytotoxic compound having the general structural formula



in which R^1 is hydrogen or methyl, R^2 is ethyl, isopropyl, cyclopropyl, tert.butyl, methylamino, dimethylamino, ethylamino or methoxymethylamino, R^3 is phenyl, 4-chlorophenyl, 3,4-dichlorophenyl, 4-methylphenyl or 4-methoxyphenyl, R^4 is hydrogen or C_1 to C_3 lower alkyl and R^5 is hydrogen or methyl, with the further stipulation that either, but not both R^4 and R^5 may be hydrogen.

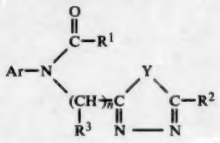
4,243,408

HERBICIDAL N-TRIAZOLYLMETHYL-SUBSTITUTED ALPHA-HALOACETANILIDE

David C. K. Chan, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 11, 1978, Ser. No. 904,955
Int. Cl.[3] **C07D** *249/08*
U.S. Cl. 71—092 **11 Claims**

1. A compound of the formula



wherein Ar is phenyl or phenyl substituted with 1 to 3 of the same or different substituents selected from fluoro, chloro, bromo, iodo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or haloalkyl of 1 to 4 carbon atoms and 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo or iodo, R^1 is halomethyl of 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo, or iodo, R^2 is hydrogen; alkyl of 1 to 6 carbon atoms; alkenyl of 2 to 6 carbon atoms; alkynyl of 2 to 6 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; haloalkyl of 1 to 4 carbon atoms and 1 to 3 of the same or different halogens selecteed from fluoro, chloro, bromo or iodo; alkoxy of 1 to 6 carbon atoms; alkylthio of 1 to 6 carbon atoms; alkenylthio of 2 to 6 carbon atoms; alkynylthio of 2 to 6 carbon atoms; phenyl; phenyl substituted with 1 to 3 of the same or different substituents selected from fluoro, chloro, bromo, iodo, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or haloalkyl of 1 to 4 carbon atoms and of 1 to 3 of the same or different halogens selected from fluoro, chloro, bromo or iodo; or NR^5R^6 wherein R^5 and R^6 individually are hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms or alkynyl of 2 to 6 carbon atoms, R^3 is hydrogen or alkyl of 1 to 6 carbon atoms, n is 1 or 2, and Y is NR wherein R is hydrogen, alkyl of 1 to 6 carbon atoms, alkenyl of 2 to 6 carbon atoms or alkynyl of 2 to 6 carbon atoms with the proviso that Ar is not 3,4-dichlorophenyl.

10. An herbicidal composition comprising an herbicidally effective amount of the compound defined in claim **1** and a biologically inert carrier.

4,243,409

1,2,4-OXADIAZOLE DERIVATIVES AND HERBICIDE COMPOSITION CONTAINING SAME

Erich Schmidt, and Friedrich Arndt, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, DEX

Filed Jan. 4, 1979, Ser. No. 1,157
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801509
Int. Cl.[3] **A01N** *43/82;* **C07D** *271/06*
U.S. Cl. 71—92 **7 Claims**

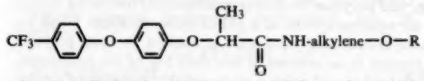
1. A selective herbicidal composition comprising about 5 to 95% by weight of at least one of compounds selected from the group consisting of 3-[3-(cyclopropylcarbonylamino)-phenyl]-5-tert.-butyl-1,2,4-oxadiazole, 3-[3-(butyrylamino)-phenyl]-5-tert.-butyl-1,2,4-oxadiazole, 5-chloromethyl-3-(3-cyclopropylcarbonylaminophenyl)-1,2,4-oxadiazole, 3-(3-cyclopropylcarbonylaminophenyl)-5-methyl-1,2,4-oxadiazole, and 3-(3-cyclopropylcarbonylaminophenyl)-5-trifluoromethyl-1,2,4-oxadiazole; and about 95 to 5% by weight of a liquid or solid carrier material.

4,243,410
HERBICIDALLY ACTIVE α-(4-PHENOXYPHENOXY)PROPIONIC ACID ALKOXYALKYL AMIDES, HERBICIDAL COMPOSITIONS CONTAINING THEM AND THEIR USE

Beat Böhner, Binningen, and Otto Rohr, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 8, 1979, Ser. No. 1,515
Claims priority, application Switzerland, Jan. 10, 1978, 223782/78
Int. Cl.[3] A01N *37/18*; C07C *103/178*
U.S. Cl. 71—118 8 Claims

1. A herbicidally active 4-(p-trifluoromethylphenoxy)-α-phenoxypropionic acid alkoxyalkyl amide of the formula I

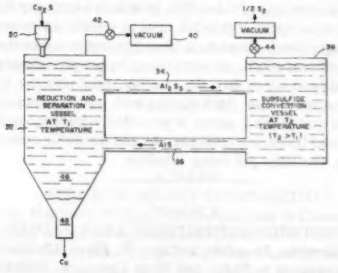


wherein "alkylene" represents a straight or branched saturated hydrocarbon chain of 1 to 4 carbon atoms and R represents an alkyl radical of 1 to 4 carbon atoms.

4,243,411
REDUCTION OF METAL SULFIDES

Robert N. Anderson, Palo Alto, Calif., assignor to Parlee-Anderson Corporation, Redwood City, Calif.

Filed May 14, 1979, Ser. No. 38,382
Int. Cl.[3] C22B *31/00*
U.S. Cl. 75—69 19 Claims



1. A process for the recovery of a desired metal in reduced form from a sulfide compound of the desired metal, comprising the steps of reducing said desired metal sulfide in its lowest valence state to metallic form by reaction with a process metal in the subsulfide form in a liquid or molten bath, said process metal being capable of forming a higher oxidation state process metal high sulfide compound stable in a lower predetermined first temperature range and a lower oxidation state process metal subsulfide compound stable in a higher predetermined second temperature range, said process metal being more reactive than said desired metal and forming a more stable sulfide compound than said desired metal, said reducing reaction being performed in said first temperature range so that a substantial portion of said process metal compound is converted to its high sulfide form while said desired metal sulfide is reduced to its metallic form.

4,243,412
DENTAL ALLOY

Dinesh C. Tandon, Canton, Mich., assignor to Sybron Corporation, Rochester, N.Y.

Filed Jun. 7, 1979, Ser. No. 46,325
Int. Cl.[3] C22C *19/05*
U.S. Cl. 75—171 5 Claims

1. A corrosion resistant biocompatible dental alloy which exhibits good porcelain to metal bond strength which consists of the following constituents:

	Percent by Weight
Chromium	10–20
Molybdenum	4–10
Iron	3–6
Columbium	2–6
Aluminum	up to 2.0
Silicon	1.0–3.0
Carbon	0.05–0.5
Nickel	Balance.

4,243,413
INTEGRATED AG-SNO ALLOY ELECTRICAL CONTACT MATERIALS

Akirə Shibata, Yokohama, Japan, assignor to Chugai Denki Kogyo Kabushiki-Kaisha, Japan

Continuation-in-part of Ser. No. 807,910, Jun. 20, 1977, abandoned. This application Feb. 26, 1979, Ser. No. 14,915
Int. Cl.[3] B22F *3/00*; C22C *1/05, 29/00*
U.S. Cl. 75—234 5 Claims

1. An electrical contact material of comparatively large dimensions, formed from a plurality of generally similarly shaped pieces of silver-base alloy, which are of such dimensions that they are substantially smaller than the material having said large dimensions, and are such that said pieces are readily and completely internally oxidizable without depleted zones, each of said pieces of silver-base alloy, prior to being formed into said contact material, having silver grain matrices with metal oxides dispersedly precipitated therein, and said matrices being defined by metal oxides concentratedly precipitated along silver grain boundaries arranged generally in a tortoise-shell pattern as the result of internal oxidation for a comparatively short period of time, and comprising 1.5 to 10% by weight of tin, 0.5 to 6% by weight of indium, and a trace amount of less than 0.5% by weight of iron family element metals, and said pieces of the alloy being metallurgically integrated with each other by pressure rolling or extrusion conducted at a temperature higher than 700° C., and at about the melting point of silver, thereby to eliminate said grain boundaries in said pieces by causing precipitated metal oxides to migrate from said boundaries into said grain matrices, and to cause said matrices to coalesce to each other to form said contact material with said metal oxides being distributed uniformly throughout said material.

3. A method of making a Ag-SnO alloy electric contact material of comparatively large dimensions, which comprises

providing a desired number of pieces of silver-base alloy of such dimensions that they are internally oxidizable within a comparatively short period of time, each of said pieces comprising 1.5 to 10% by weight of tin, 0.5 to 6% by weight of indium, and a trace amount of less than 0.5% by weight of nickel or cobalt, and

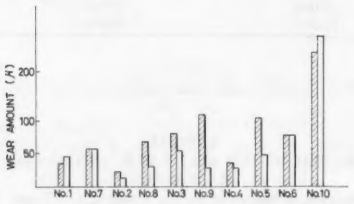
internally oxidizing said pieces to form throughout each piece silver grain matrices defined by boundaries created by concentrations of precipitated metal oxides, and

metallurgically integrating said pieces to each other by simultaneously subjecting them to extreme pressure at a temperature higher than 700° C. and sufficient to induce at least partially the melting of said pieces of said alloy without decomposing or breaking down the metal oxides precipitated in said pieces, thereby to eliminate the concentrations of said metal oxides around the silver grain matrices in said metallurgically integrated pieces, and to disperse the formerly concentrated metal oxides uniformly throughout the silver matrices of the integrated pieces.

4,243,414
SLIDABLE MEMBERS FOR PRIME MOVERS

Kentaro Takahashi; Yoshikatsu Nakamura, both of Ohmiya, and Masajiro Takeshita, Yono, all of Japan, assignors to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Oct. 27, 1978, Ser. No. 955,445
Claims priority, application Japan, Oct. 27, 1977, 52-128120
Int. Cl.[3] B22F 5/00
U.S. Cl. 75—244 4 Claims

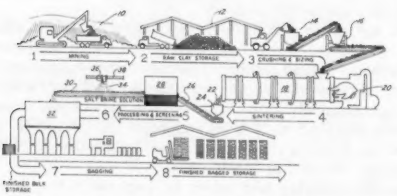


1. A slidable member for a prime mover made of an abrasion resistant liquid-phase sintered alloy, containing 0.5 to 4.0% by weight of carbon, 8.0 to 30.0% by weight of chromium, and 0.1 to 5.0% by weight of at least one of phosphorus, boron and silicon which permit liquid-phase sintering at not more than 1,250° C. and the balance iron, said alloy having 0.2 to 10% by volume of sintering pores at least 40% of which consist of pores having a pore size of not more than 150 μ.

4,243,415
DEICING AND TRACTION FORMING COMPOSITION AND METHOD OF MAKING SAME

Henry E. Lowe, Jr., 348 S. Columbia St., South Bend, Ind. 46601

Continuation-in-part of Ser. No. 884,914, Mar. 8, 1978, abandoned. This application Nov. 15, 1978, Ser. No. 960,733
Int. Cl.[2] C09K 3/18
U.S. Cl. 106—13 9 Claims



1. A deicing and traction forming composition comprising moisture softening clay particles heat-dried at a temperature below the point at which bound water is removed, said particles retaining absorptive properties and being readily disintegratable by the pressure of foot and vehicular traffic when softened by absorption of water from melting ice, and a chloride salt impregnating and coating said particles and being releasable from said particles initially by solution of the salt coating in water from an icy surface and thereafter by solution of the salt absorbed in said clay particles as said particles disintegrate and are softened by the water from the melting ice.

4,243,416
CORROSION-INHIBITING METHOD USING LATEX PAINTS AND ARTICLE

Martin J. Grourke, Lansdale, and Roy W. Flynn, Chalfont, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 412,234, Nov. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 296,466, Oct. 10, 1972, abandoned. This application Oct. 8, 1975, Ser. No. 620,685
Int. Cl.[3] C08J 3/00; C09K 3/00
U.S. Cl. 106—14.13 16 Claims

1. In a method of maintenance painting clean or rusty ferrous metal, the steps of applying one or more coats, to a coated or uncoated ferrous surface, of a corrosion-inhibiting aqueous latex paint containing a synthetic or natural polymer dispersed therein, said polymer consisting essentially of one being insoluble in an aqueous system at a pH of between about 3 and 11, any unsaturated acid monomer contained in said polymer being present in an amount of less than 5% of the monomers, and, dissolved in said paint, a water-soluble complex of a polyvalent metal, a volatile complexing agent, and a corrosion-inhibiting anion, said complex having the formula $M(Z)_xAn$, wherein M is a polyvalent metal cation, An is a corrosion-inhibiting anion, Z is a complexing volatile component, and x is the number of moles of volatile complexing agent per mole of M and being from 2 to 6, M and An being such that upon evaporation of the volatile complexing agent, M and An form an insoluble corrosion-inhibiting material, in which the quantity of said complex is from about 0.2 to about 20 millimoles per mole of water in the latex paint, the polymer on a solids basis being present in an amount of 10 to 30%, in which a pigment is present in an amount of 15to 55%, said pigment including at least one metal oxide, at least one dispersant or surfactant being present in an amount of 0.1–2.5%, in which a bodying agent is present in an amount of 0.1–5%, and in which water and any optional ingredients are present in an amount to make the total of the ingredients 100%, all parts being by weight unless otherwise stated, and air-drying the coating, whereby the ferrous metal is protected from flash rusting and, upon evaporation of the volatile complexing agent, is provided with long-term rust resistance and blistering resistance by the insoluble complex of M and An, the latex pH being alkaline.

4,243,417
CORROSION-INHIBITING LATEX PAINTS

Martin J. Grourke, Lansdale, and Roy W. Flynn, Chalfont, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 430,449, Jan. 3, 1974, abandoned, which is a division of Ser. No. 412,234, Nov. 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 296,466, Oct. 10, 1972, abandoned. This application Nov. 17, 1975, Ser. No. 632,344
Int. Cl.[3] C08J 3/00; C09K 3/00
U.S. Cl. 106—14.13 10 Claims

1. A corrosion inhibiting aqueous latex paint containing a synthetic or natural polymer dispersed therein, said polymer consisting essentially of one being insoluble in an aqueous system at a pH of between about 3 and about 11, and, dissolved therein, a water soluble complex of a polyvalent metal, a volatile complexing agent, and a corrosion inhibiting anion, said complex having the formula $M(Z)_xAn$, wherein M is a polyvalent metal cation, An is a corrosion inhibiting anion, Z is a volatile complexing component, and x is the number of moles of volatile complexing agent per mole of M, x is from 2 to 6, M and An being such that upon evaporation of the volatile complexing agent, M and An form an insoluble corrosion inhibiting material, in which the quantity of said complex is from about 0.2 to about 20 millimoles per mole of water in the latex, the polymer on a solids basis being present in an amount of 10–30%, in which a pigment is present in an amount of 15–55%, said pigment including at least one metal oxide, at least one surfactant being present in an amount of 0.1–2.5%, in

which a bodying agent is present in an amount of 0.1–5%, and in which water and any optional ingredients are present in an amount to make the total of the ingredients 100%, all parts being by weight unless otherwise specified, the latex pH being alkaline.

4,243,418

COMPOSITIONS FOR FIREPROOFING POLYESTER FIBER MATERIALS WITH SUBSTITUTED SULPHURYLAMIDES

Hermann Nachbur, Dornach; Armin Hiestand, Binningen, and Peter Rohringer, Schönenbuch, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

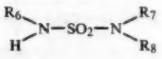
Division of Ser. No. 808,006, Jun. 20, 1977, Pat. No. 4,128,687. This application Sep. 21, 1978, Ser. No. 944,662

Claims priority, application Switzerland, Jun. 25, 1976, 8153/76

Int. Cl.³ C09K *3/28*

U.S. Cl. 106—18.22 **8 Claims**

1. A fireproofing composition, which contains at least (a) one substituted sulphurylamide of the formula



wherein

R_6 is phenyl, naphthyl, phenylethyl, benzyl, cyclohexyl or hydrogen: and R_7 and R_8 each have the meanings given for R_6, with at most two of the radicals R_6, R_7 and R_8 being hydrogen, and (b) a dispersing agent selected from the group consisting of lignin sulphonates, aromatic sulphonic acids, saturated-aliphatic dicarboxylic acids substituted with higher alkyl radicals, condensation products from aromatic sulphonic acids and formaldehyde, alkylphenol/ethylene oxide adducts, ethylene oxide adducts from fatty acids, fatty amines or fatty alcohols, sulphurated substituted benzimidazoles and sulphonated fatty acid amides.

4,243,419

FIRE RETARDANT COMPOSITION

Seymour Hartman, Mahopac, N.Y., assignor to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 626,253, Oct. 28, 1975, abandoned. This application Dec. 13, 1978, Ser. No. 969,249

Int. Cl.³ C09D *5/18*

U.S. Cl. 106—18.23 **2 Claims**

1. A composition for imparting fire retardance to a cellulosic substrate consisting of a substantially anhydrous solution of the products obtained by reacting the solution formed by digesting a mixture consisting of a dry plant material and chlorosulfonic acid with a lower alkyl alcohol in an amount at least sufficient to deactivate excess of said acid.

4,243,420

PARTICULATE MATERIAL FOR FORMING MOLDS AND METHOD FOR PRODUCING SAME

Junji Sakai, Minommachi; Syogo Morimoto, Matsudo, and Takashi Shimaguchi, Minorimachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 17, 1979, Ser. No. 30,924

Claims priority, application Japan, Apr. 17, 1978, 53-44259

Int. Cl.³ B23B *7/34*

U.S. Cl. 106—38.3 **4 Claims**

1. A method for producing a precision casting mold comprising the steps of:

mixing refractory material in particulate form with a coating material selected from the group consisting of colloidal silica, colloidal alumina, colloidal zirconia and ethyl silicate to form a mix;

further adding an aqueous solution of ammonium carbonate to the mix when the coating material is ethyl silicate;

drying said mix and allowing the dried mix to set;

crushing the mix to form a particulate composition;

admixing the resultant particulate composition with a binder comprising an aqueous solution of hydrolysed ethyl silicate and with a hardening and gelling agent to form a slurry;

forming the slurry into a mold having a desired shape and allowing the mold to gel; and

immersing the gelled mold in a hardening liquid to allow the mold to completely harden and thereafter drying and firing the mold.

4,243,421

ALKALI-RESISTANT GLASS COMPOSITION

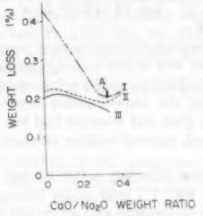
Makoto Kume, Ashiya, Japan, assignor to Nippon Sheet Glass Co., Ltd., Japan

Filed Jul. 5, 1979, Ser. No. 54,884

Claims priority, application Japan, Jul. 8, 1978, 53-83174

Int. Cl.³ C03C *13/00, 3/04, 3/10*

U.S. Cl. 106—50 **3 Claims**



1. An alkali-resistant glass composition consisting essentially of

SiO_2	51.0–61.0%
ZrO_2	18.0–24.0%
CaO	0.8–5.0%
BaO	5.0–13.0%
Na_2O	8.0–17.0%
K_2O	0–5.0%
B_2O_3	0–3.0%
Al_2O_3	0–3.0%

all percentages based on the weight of the glass composition, the total amount of CaO and BaO being 5 to 15% based on the weight of the glass composition, and the mole ratio of BaO/(CaO+BaO) being from 0.2 to 0.8.

4,243,422

GRANULAR QUARTZ GLASS PRODUCT

Arnold Lenz, Köln-Stammheim; Gerhard Kreuzburg, Niederkassel, and Rainer Haase, Bokel, Oldenburg, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Continuation of Ser. No. 752,715, Dec. 20, 1976, Pat. No. 4,098,595. This application Dec. 14, 1977, Ser. No. 860,523

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1975, 2557932

The portion of the term of this patent subsequent to Jul. 4, 1995, has been disclaimed.

Int. Cl.³ C03C *3/06*

U.S. Cl. 106—52 **4 Claims**

1. A quartz glass consisting essentially of silica, said quartz glass containing alkoxy groups, said alkoxy groups present in an amount of less than 1 weight percent, said quartz glass having a total impurity content of less than 1 part per million,

said quartz glass having a surface area, measured in accordance with BET, of approximately 400 to 800 square meters per gram prepared by a process consisting essentially of:

A. Forming a silicic acid ester of an alcohol selected from the group consisting of a C_1–C_5 aliphatic alcohol, a C_2–C_8 alkanol wherein the carbon chain of the alkyl group can be interrupted by one or more oxygen atoms and a C_2–C_5 glycol by reacting silicon or ferrosilicon with said alcohol;

B. Hydrolyzing said silicic acid ester by contacting the same with 105–500 percent of the stoichiometrically necessary amount of water, said water having a pH of 2–5 to thereby form a silica gel;

C. Gelling said silica sol by subjecting it to an elevated temperature up to 100° C.; and

D. Drying said gel by heating it at increasing temperatures up to 300° C. until the silica gel achieves a free flowing state.

4,243,423
GLASS MANUFACTURING

Charles M. Hohman, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 912,659, Jun. 5, 1978, abandoned. This application Oct. 10, 1979, Ser. No. 83,727

Int. Cl.³ C03C *3/04*

U.S. Cl. 106—54 **10 Claims**

1. In a glass manufacturing method comprising combining batch ingredients and water into agglomerates, heating said agglomerates, discharging said agglomerates to a melting furnace for melting, the improvement wherein said glass is a B_2O_3 containing glass and wherein said batch ingredients contain an uncalcined, mineral sodium calcium borate as a major source of B_2O_3.

9. A B_2O_3 glass forming pellet having a temperature in excess of about 500° C., said pellet having been formed by combining batch ingredients and water and wherein said batch ingredients contain an uncalcined, mineral sodium calcium borate with in excess of 5 moles of chemical water.

4,243,424
PROCESS FOR THE PRODUCTION OF DEAD BURNED REFRACTORY MAGNESIA

Jack B. Reynolds, Midland, and Charles R. Amos, Auburn, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 13, 1978, Ser. No. 960,382

Int. Cl.³ C01F *5/02*

U.S. Cl. 106—58 **8 Claims**

1. A method for producing in a single burning step a high density, dead-burned, refractory magnesia from an aqueous slurry of magnesium hydroxide comprising:

(a) simultaneously thermally dehydrating and mechanically working said aqueous slurry with a compressive-shearing force to form coherent compacts of magnesium hydroxide containing about 75 to about 85 percent by weight solids; and

(b) sintering said compacts at a sufficient temperature to form a dead-burned refractory magnesia.

4,243,425
METHOD OF REFINING THE SILICATIC SLAG PHASE OBTAINED IN THE THERMAL RECOVERY OF PHOSPHORUS FROM PHOSPHATES

Walter Kerstan, Bonn, Fed. Rep. of Germany, assignor to Wessel-Werk Gesellschaft mit beschränkter Haftung, Bonn, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,824

Claims priority, application Austria, Dec. 20, 1977, 9131/77

Int. Cl.³ C04B *7/14*

U.S. Cl. 106—117 **20 Claims**

1. Method for the refining of the silicatic slag phase produced in the thermal recovery of phosphorus from phosphates, which method comprises treating the slag, in the form of finely granular solid material, with steam at a temperature between 600° C. and the softening temperature of the slag.

4,243,426
ASPHALT COMPOSITIONS MODIFIED WITH ORGANO-SILANE COMPOUNDS

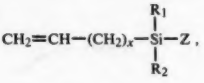
Alfred Marzocchi; Michael G. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 852,772, Nov. 18, 1977, abandoned. This application Aug. 13, 1979, Ser. No. 66,207

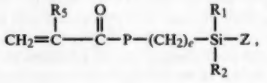
Int. Cl.³ C08L *95/00*

U.S. Cl. 106—273 R **5 Claims**

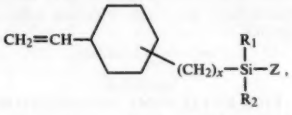
1. A silicon-modified bitumen composition prepared by reaction of (1) a bitumen selected from the group consisting of a bitumen and a bitumen chemically modified with a modifying agent selected from the group consisting of steam and air, and (2) an organo silicon compound selected from the group consisting of a compound having the formula:



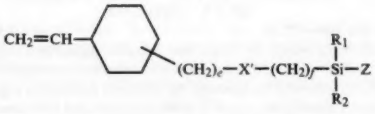
a compound having the formula:



a compound having the formula:



and a compound having the formula:



wherein x is 0 or an integer from 1–3, Z is a readily hydrolyzable group; R_1 and R_2 are selected from the group consisting of Z and a non-hydrolyzable organic group; R_5 is hydrogen or methyl; P is O or —NH—; e is an integer from 2–6 and the hydrolysis products of said organo silicon compound, in the presence of a catalyst to promote the reaction between the ethylenic unsaturation of said organo silicon compound with ethylenic unsaturation in the bitumen.

4,243,427
HIGH CONCENTRATION PHOSPHORO-SILICA SPIN-ON DOPANT

Raymond DiBugnara, Huntington Beach, Calif., assignor to TRW Inc., Los Angeles, Calif.

Filed Nov. 21, 1977, Ser. No. 853,345

Int. Cl.³ H01L *21/22*

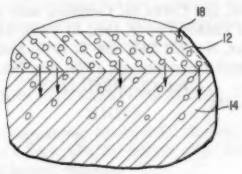
U.S. Cl. 106—287.16 **6 Claims**

1. A coating composition useful for forming a high concen-

tration phosphoro-silica spin-on dopant, said composition formed by the steps of:

(a) heating an aqueous solution of $Al(H_2PO_4)_3 \cdot XH_2O$;

(b) adding at least 25 percent by volume of an alcohol to said hot solution;



(c) permitting the $Al(H_2PO_4)_3 \cdot XH_2O$ alcohol solution to cool; and

(d) mixing the solution formed from steps (a) through (c) with an alcohol solution of tetraethylorthosilicate so as to form said coating composition.

4,243,428

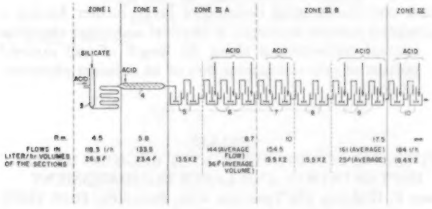
PROCESSES FOR THE MANUFACTURING OF PRECIPITATED SILICA

Jean-Baptise Donnet, 29, rue Zundlac, 68 Didenheim; Bernard Baudru, 5 allee Maurice Ravel, 38 Echirolles; Maurice Coudurier, 30 rue Tutor Hauges, 69 Maysicu, and Georges Vrisakis, 4 quai de la Plage, 69 Collonges, all of

Continuation of Ser. No. 685,512, May 12, 1976, abandoned, which is a continuation of Ser. No. 542,654, Jan. 21, 1975, abandoned, which is a continuation of Ser. No. 260,412, Jun. 7, 1972, abandoned. This application Jan. 24, 1979, Ser. No. 6,153

Int. Cl.[3] **C01B** *33/18;* **C09C** *1/28*

U.S. Cl. 106—288 B **6 Claims**



1. A process for the preparation of stable precipitated silicas having surface areas ranging from between about 100 to 600 square meters per gram which do not substantially vary on drying which comprises the steps of:

(a) forming an alkali metal silicate solution having a concentration of between about 100 to 200 grams per liter of alkali metal silicate and having an SiO_2/Na_2O molar ratio of between 1 and 4;

(b) adding sulfuric acid to said alkali metal silicate solution in a first stage at a temperature of about 40°–95° C. wherein the silicon dioxide to alkali metal oxide molar ratio is in the range of about 4.5 to 5.5 and wherein gellification does not occur;

(c) continuing the addition of said sulfuric acid in a second stage at a constant rate of addition at a temperature of about 40°–95° C. until a point at which the reaction medium then reaches a molar ratio of silicon dioxide to alkali metal oxide of about 5.5 wherein the monomer silicate continues to be transformed into oligomers;

(d) interrupting the addition of said sulfuric acid for a period of between about 5 and 30 minutes;

(e) resuming the addition of said sulfuric acid in a third stage at a constant rate of addition and a temperature of about 40°–95° C. until a point at which the reaction medium reaches a molar ratio of silicon dioxide to metal oxide in a range of about 10 to 25;

(f) interrupting the addition of said acid for a period of between about 5 and 30 minutes;

(g) resuming the addition of said acid in a fourth stage at a temperature of about 40°–95° C. until the medium reaches a pH value of 5, wherein all of the silica is in the form of a precipitate and all alkali metal hydroxide is neutralized;

(h) stopping the addition of said acid; and

(i) recovering the precipitated silicas.

4,243,429

PROCESS FOR PRODUCING TOBERMORITE AND ETTRINGITE

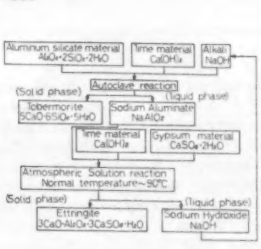
Hideo Tamura, Takarazuka, and Seiro Ibuki, Kusatsu, both of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Jun. 22, 1979, Ser. No. 51,057

Claims priority, application Japan, Jun. 22, 1978, 53-76143; Jun. 22, 1978, 53-76145

Int. Cl.[3] **C09C** *1/02;* **C01B** *33/24;* **C01F** *7/76*

U.S. Cl. 106—306 **7 Claims**



1. A process for producing ettringite by adding an alkali solution to siliceous material and gypsum material and reacting the mixture at room temperature or hydrothermally, characterized by the steps of:

admixing an alumina-containing siliceous material and a lime material with an alkali solution,

subjecting the resulting mixture to hydrothermal reaction with water vapor at a pressure of 4 to 40 kg/cm^2 to form tobermorite,

filtering off the tobermorite from the reaction mixture, and

admixing a lime material and a gypsum material with the resulting alkali reaction product in the filtrate and reacting the mixture at room temperature to a temperature of up to 90° C. to form ettringite.

7. A process for producing ettringite by adding an alkali solution to siliceous material and gypsum material and reacting the mixture at room temperature or hydrothermally, characterized by the steps of:

admixing an alumina-containing siliceous material and a lime material with an alkali solution,

subjecting the resulting mixture to hydrothermal reaction with water vapor at a pressure of 4 to 40 kg/cm^2 to form tobermorite, and

admixing a lime material and a gypsum material with the resulting alkali reaction product in the reaction mixture containing the tobermorite and reacting the mixture at room temperature to a temperature of up to 90° C. to form ettringite.

4,243,430
PIGMENT DISPERSANT FOR AQUEOUS PAINTS

Peter R. Sperry, Doylestown, and Richard J. Wiersema, North Wales, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

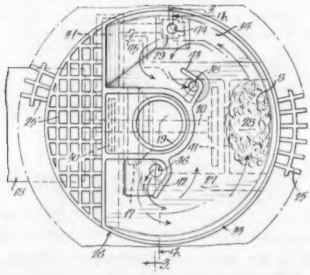
Filed Sep. 21, 1977, Ser. No. 835,262
Int. Cl.[3] C08L 33/10
U.S. Cl. 106—308 M 14 Claims

1. A pigment paste, adapted for use in a wide variety of aqueous latex paints, comprising a water-compatible suspension of a finely divided pigment and, for dispersion thereof, an effective amount of a water soluble dispersant comprising (1) an addition copolymer of greater than about 30 % by weight of an α; β-unsaturated monovinylidene carboxylic acid or a mixture of such acids and (2) at least one other ethylenically unsaturated monomer, the copolymer having an apparent pKa between 6.0 and 7.5 and a number average molecular weight between about 500 and about 15,000; the copolymer being characterized by forming a water soluble salt with a zinc ammonia complex ion at a pH of 9.6.

4,243,431
DISHWASHER SOIL SEPARATOR

Geoffrey L. Dingler, St. Joseph Township, Berrien County, Mich., and Philip P. Johnson, Conway, Ark., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 14, 1979, Ser. No. 48,443
Int. Cl.[3] B08B 3/02
U.S. Cl. 134—104 17 Claims



1. In a dishwasher apparatus having a dishwashing liquid circulating means defining a flow passage having an intake portion and a discharge portion, pump means for causing dishwashing liquid flow through said flow passage from said intake portion to said discharge portion, means defining a bypass passage having an inlet and an outlet each communicating with said flow passage downstream of said intake portion to bypass a portion of the liquid through said bypass passage as an incident of flow of the liquid through said flow passage, the improvement comprising:

collecting means in said bypass passage means for collecting soil from the liquid flowed through said bypass passage and depositing the collected soil at a collecting position within said bypass passage intermediate said inlet and said outlet;

means defining a drain port communicating with said bypass passage spaced from said collecting position to be free of collected soil during bypass flow of the liquid through said bypass passage from said inlet to said outlet;

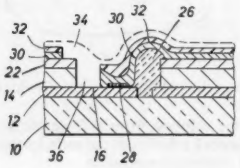
means for selectively closing said drain port to permit said liquid flow through said bypass passage past said closed drain port for collecting said soil at said collecting position; and

means for concurrently opening said drain port and causing liquid flow from said flow passage inwardly through each of said inlet and outlet into said bypass passage for flow therethrough to transfer the collected soil from said collecting position to said drain port for facilitated elimination of the soil through the drain port.

4,243,432
SOLAR CELL ARRAY

John F. Jordan, and Curtis M. Lampkin, both of El Paso, Tex., assignors to Photon Power, Inc., El Paso, Tex.

Division of Ser. No. 831,544, Sep. 8, 1977, Pat. No. 4,181,476.
This application Sep. 25, 1978, Ser. No. 945,312
Int. Cl.[3] H01L 31/06
U.S. Cl. 136—244 22 Claims



1. A large area panel of photovoltaic cells, comprising:

a transparent vitreous substrate member having at least one flat surface,

a plurality of spaced photovoltaic cells formed in a backwall configuration on said flat surface, each of said cells having facing edges with adjacent ones of said cells;

each of said cells having a transparent electrically conductive film adjacent said substrate, a semiconductor film containing elements from Groups II and VI of the Periodic Table and overlying said transparent film, a heterojunction formed on said semiconductor film, and a continuous solid conductive layer having a first portion overlying said heterojunction;

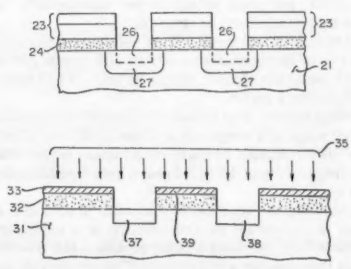
said transparent film having an exposed portion along the length of one of said facing edges;

said continuous solid conductive layer further having a second portion deposited in physical and series electrical contact conterminous along the length of said exposed portion of said transparent film of an adjacent photovoltaic cell.

4,243,433
FORMING CONTROLLED INSET REGIONS BY ION IMPLANTATION AND LASER BOMBARDMENT

James F. Gibbons, 320 Tennyson Ave., Palo Alto, Calif. 94301

Filed Jan. 18, 1978, Ser. No. 870,432
Int. Cl.[2] H01L 21/26
U.S. Cl. 148—1.5 8 Claims



3. The method of forming a semiconductor structure having inset regions of predetermined conductivity type and predetermined area and depth comprising the steps of forming a mask having openings of said predetermined area on one surface of

the device, forming by ion implantation through said openings an amorphous region of predetermined area and depth, implanting by ion implantation through said openings to a depth less than said depth impurities characterizing said conductivity type, and striking said region through said mask openings with a laser beam having sufficient energy to anneal the damage produced by the implantation but not sufficient to cause significant diffusion of impurities from said amorphous region.

4,243,434

COMPOSITION FOR COATING METAL-WORKING TOOLS

David Hartley, Normanton; Michael D. Barrett, Sutton Coldfield, and Paul Wainwright, Horsforth, all of England, assignors to Rocol Limited, England

Filed May 30, 1978, Ser. No. 910,340
Int. Cl.³ C23F 7/10
U.S. Cl. 148—6.15 R **2 Claims**

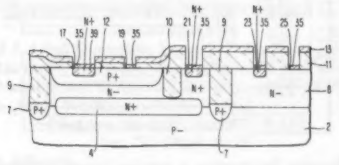
1. An aqueous composition for coating a metal-working tool, comprising by weight
   (a) molybdenum disulphide or graphite solid lubricant in an amount of 5 to 60 parts,
   (b) an aluminum phosphate binder, in an amount of 1 to 5 parts calculated as aluminum hydroxide,
   (c) ortho-phosphoric acid, in an amount of 3 to 25 parts calculated as the 88 to 93% acid,
   (d) optionally a chromate or dichromate, in an amount of up to 5 parts calculated as chromium trioxide.

4,243,435

BIPOLAR TRANSISTOR FABRICATION PROCESS WITH AN ION IMPLANTED EMITTER

Conrad A. Barile, Wappingers Falls; Goerge R. Goth, Poughkeepsie; James S. Makris; Arunachala Nagarajan, both of Wappingers Falls, and Raj K. Raheja, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1979, Ser. No. 51,078
Int. Cl.³ H01L 21/22, 21/26
U.S. Cl. 148—1.5 **26 Claims**



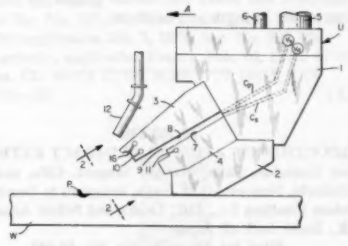
15. A method of forming semiconductor devices in a semiconductor substrate comprising;
   forming emitter and base contact windows through a mask on said substrate and a collector and Schottky barrier diode anode and cathode contact windows partially through said mask while protecting the remainder of said mask with a resist layer, said mask comprising a composite layer of silicon dioxide under silicon nitride, the silicon dioxide being thicker in the region of the collector and Schottky barrier anode and cathode contact windows than in the region of the emitter window;
   removing said resist layer,
   forming the remainder of the collector contact window and the Schottky barrier diode anode and cathode contact windows through said mask while protecting said emitter and base contact windows with a second resist layer;
   removing said second resist layer;
   forming a thin protective layer over at least said emitter window;
   forming a third resist layer which covers said base and Schottky barrier diode anode windows and leaves said emitter and Schottky barrier diode cathode windows exposed, and;
   introducing impurities through said emitter window and said Schottky barrier diode cathode contact window by ion implantation.

4,243,436

INSTANTANEOUS SCARFING BY MEANS OF A PILOT PUDDLE

Stephen A. Engel, Granite Springs, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 24,597, Mar. 28, 1979, abandoned. This application Nov. 5, 1979, Ser. No. 91,162
Int. Cl.³ B23K 7/00
U.S. Cl. 148—9.5 **16 Claims**



1. A process for spot scarfing the surface of a metal workpiece comprising:
   (a) impinging a stream of pilot oxygen gas upon a portion of the workpiece which is at least at its oxygen ignition temperature, said stream of pilot oxygen gas being narrower than the width of a desired scarfing cut,
   (b) causing relative motion between said workpiece and said stream of pilot oxygen gas, so as to continuously produce a pilot puddle of molten metal along a chosen path on the surface of the workpiece,
   (c) contacting said pilot puddle with a high intensity stream of oxygen gas so as to spread the puddle to a preselected width when said puddle reaches an area to be spot scarfed on said workpiece, and
   (d) scarfing said area by impinging a stream of scarfing oxygen gas on the spread puddle, said stream of scarfing oxygen gas being wider than the pilot oxygen stream.

4,243,437

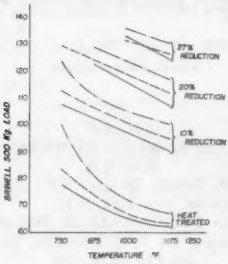
PROCESS FOR FORMING ARTICLES FROM LEADED BRONZES

James L. Chill; Harry H. Taylor, and Evertt H. Granger, all of Marion, Ohio, assignors to Marion Bronze Company, Marion, Ohio

Continuation-in-part of Ser. No. 702,286, Jul. 2, 1976. This application Nov. 20, 1978, Ser. No. 962,397
Int. Cl.³ C22F 1/08
U.S. Cl. 148—11.5 C **11 Claims**

1. A method of forming bearing articles from chill-cast high lead bronze alloy having low melting point constituents including lead which is in the proportion of at least 4% comprising the steps of alternatingly
   (A) mechanically cold working a casting of the lead bronze alloy to effect a predetermined dimensional reduction, up to 30 percent to avoid fracturing and

(B) annealing the casting of the lead bronze alloy at a predetermined temperature for a predetermined period of time



to increase the alloy's ability to be worked into a bearing configuration and affect mechanical properties of the alloy such as tensile strength and hardness.

4,243,438

PRODUCTION OF ALUMINUM IMPACT EXTRUSIONS

Kiyomi Yanagida, Suita; Harumi Magusa, Gifu, and Akihiko Takahashi, Nagoya, all of Japan, assignors to Sumitomo Aluminium Smelting Co., Ltd., Osaka and Nihon Atsuen Kogyo K.K., Itami, both of, Japan

Filed Jul. 18, 1979, Ser. No. 58,661

Claims priority, application Japan, Jul. 21, 1978, 53-89708; Feb. 21, 1979, 54-19523; Feb. 21, 1979, 54-19524

Int. Cl.³ C22F *1/04*

U.S. Cl. 148—11.5 A **11 Claims**

1. In a method of producing an aluminum impact extrusion by impact extruding a slug stock of an aluminum base alloy using an impact extrusion press and then annealing the extruded product, the improvement for producing an impact extrusion having excellent ductility, increased amenability to repeated flexure, enhanced strength against rupture and improved subsequent fabrication characteristics, which comprises using, as the slug stock, an aluminum base alloy consisting essentially of aluminum and 0.2 to 2.0% by weight of cobalt, or an aluminum base alloy consisting essentially of aluminum and 0.2 to 2.0% by weight of nickel and annealing the extruded product at a temperature of 150° to 600° C.

4,243,439

PROCESS OF QUENCHING METAL PIECES AND PRODUCT PRODUCED

Joseph Rauch, Vitry-sur-Seine, France, assignor to Societe de Vente de l'Aluminium Pechiney, Paris, France

Division of Ser. No. 843,499, Oct. 19, 1977, abandoned. This application Aug. 21, 1979, Ser. No. 68,480

Claims priority, application France, Oct. 19, 1976, 76 32035

Int. Cl.³ C21D *1/44*

U.S. Cl. 148—20.6 **7 Claims**

1. In the process of heat treating metallic pieces of quenchable alloys, the improvement comprising subjecting the pieces as removed from a dissolving treatment furnace to quenching in a composition comprising an aqueous suspension of a binder and a pulverulent filler component to selectively modify the density, viscosity and heat conductivity of the composition to thereby assure an improved low level of internal stresses in the heat treated pieces.

4,243,440

COATED SOFT SOLDER BAR OR INGOT

Gordon F. Arbib, Hemel Hempstead, England, and Mervin Baranick, Long Island City, N.Y., assignors to Multicore Solders Limited, Hemel Hempstead, England

Filed May 22, 1979, Ser. No. 41,423

Claims priority, application United Kingdom, May 23, 1978, 21635/78

Int. Cl.³ B23K *35/34*

U.S. Cl. 148—23 **9 Claims**

1. A soft solder alloy in the form of an extruded or cast bar or ingot substantially completely coated with a coating material essentially comprising:

(I) at least one neutral ester selected from the group consisting of an ester derived from a polyhydric alcohol and at least one saturated fatty acid, an ester derived from a polyhydric alcohol and at least one unsaturated fatty acid and an ester derived from a polyhydric alcohol and a monocarboxylic aromatic acid, said ester having a molecular weight of at least 300, and

(II) at least one ester selected from the group consisting of an ester derived from a polyhydric alcohol and a rosin and an ester derived from a polyhydric alcohol and a modified rosin.

4,243,441

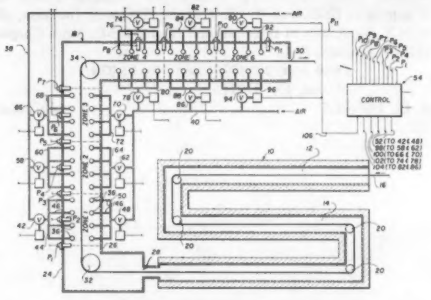
METHOD FOR METAL STRIP TEMPERATURE CONTROL

Walter A. Wilson, Pittsburgh, Pa., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed May 9, 1979, Ser. No. 37,529

Int. Cl.³ C21D *1/26*

U.S. Cl. 148—128 **17 Claims**



1. A process for treating a running length of material by transferring heat to or from the material under controlled conditions, the process comprising,

moving the material longitudinally through an elongated treatment station including a plurality of contiguous treatment zones,

sensing the temperature of the moving material at a plurality of sensing points including the entrance and exit of each treatment zone and at least one intermediate point in at least selected ones of the treatment zones,

comparing the temperature measurements at successive sensing points through the treatment station and generating a temperature change signal proportional to the temperature change between successive sensing points,

averaging the temperature change signals from each of said selected ones of said treatment zones and generating an average temperature change signal proportional to the average of the temperature change signals from each of said selected ones of said treatment zones, and

utilizing the average temperature change signal to control the transfer of heat to or from the material moving in that zone.

4,243,442

PRE-SOLUTION PREPARATION OF DOUBLE BASE PROPELLANT BINDER

Robert J. Armantrout, Salt Lake City, Utah, assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1979, Ser. No. 38,761
Int. Cl.[3] C06B *45/10*
U.S. Cl. 149—19.92 4 Claims

1. A method for readying a combination of nitrocellulose and liquid polyester which contains traces of water for use as a binder in a double base propellant, said method comprising the steps of:

A. adding granular stabilizer material to said combination and forming a suspension by subjecting the granular stabilizer material, nitrocellulose and polyester to low shear mixing;

B. combining the suspension with a plasticizer and forming a plasticized suspension by means of dry sparge air mixing; and

C. stripping the traces of water from the plasticized suspension by continuing dry sparge air mixing and, at the same time, applying heat for a predetermined length of time.

4,243,443

AZIDE AND DOPED IRON OXIDE GAS GENERATING COMPOSITION

Lechoslaw A. M. Utracki, Pierrefonds, Canada, assignor to C-I-L Inc., Montreal, Canada

Filed Jun. 4, 1979, Ser. No. 45,584
Claims priority, application Canada, Jul. 17, 1978, 307563
Int. Cl.[3] C06B *35/00*
U.S. Cl. 149—35 4 Claims

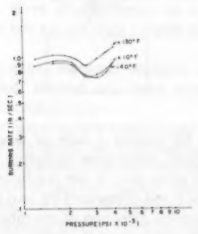
1. A solid nitrogen gas generating composition comprising a substantially stoichiometric admixture of an alkali metal azide or an alkali earth metal azide and a doped iron oxide, said doped iron oxide comprising an acicular iron oxide particle having an amount of up to 1.0% by weight of other metal oxide selected from nickel oxide and cobalt oxide impregnated into the iron oxide lattice, said doped iron oxide further having a particular size of less than 10 microns.

4,243,444

BALLISTIC MODIFIERS, SYNTHESIS . . . PROPELLANTS

Bernard J. Alley, Huntsville; James D. Dake, Redstone Arsenal, and Hiram W. H. Dykes, Huntsville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 11, 1970, Ser. No. 58,133
Int. Cl.[3] C06B *25/26*
U.S. Cl. 149—98 9 Claims



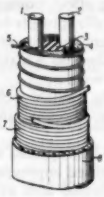
1. A solid propellant composition comprising, double base type propellant ingredients including nitrocellulose and nitroglycerine and a ballistic modifier composition, said ballistic modifier composition consisting of the reaction product formed by mixing different metal ions selected from the group consisting of lead, copper, silver, cobalt, nickel, zinc and bismuth with from one to two chelating agents in the pressure of a reaction liquid selected from the group consisting of water, acetone and alcohol to produce a reaction slurry; stirring said reaction slurry until a constant pH is obtained; and filtering said reaction slurry to separate the reaction product as said ballistic modifier composition to be added to the other propellant ingredients.

4,243,445

METHOD FOR MAKING A REMOTE CONTROL CABLE

Pierre Seguin, Pont-de-Cheruy, France, assignor to Chavanoz SA, Chavanoz, France

Division of Ser. No. 769,338, Feb. 16, 1977, Pat. No. 4,135,056.
This application Jul. 7, 1978, Ser. No. 922,548
Claims priority, application France, Feb. 16, 1976, 76 04378
Int. Cl.[2] H01B *13/06;* B29F *3/10;* H01B *7/00*
U.S. Cl. 156—55 1 Claim



1. A process for the manufacture of a remote control cable having two conducting wires separated and held by an insulating central element, reinforcing wires parallel to the said conductors, at least one layer of lapping covering these elements and at least one external coating layer, said process comprising the steps of:

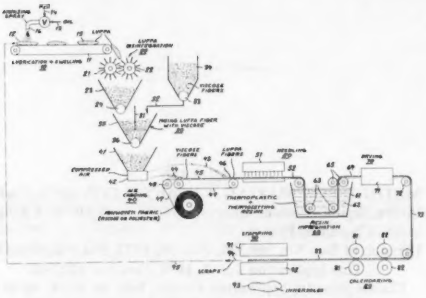
passing the conducting wires into a bath of molten material of an insulating product having a low dielectric constant; gauging the coated wires by passing them through a die of elliptical cross section by leading the wires horizontally to the gauging die and holding the wires in contact with the walls of the said die with the portion of the wires in contact with the walls of the die being less than half of the peripheral surface of the wires; wherein the conducting wires are led into the bath spaced at a distance from one another and converged toward one another adjacent the gauging die; wherein the conducting wires are maintained at the desired spacing from one another within said die to form a central dielectric element comprising two longitudinal recesses arranged symmetrically relative to a central solid portion, each recess enclosing a conductor over more than half of its periphery, the remainder of the periphery forming a free surface, the external surface of the central dielectric element forming with each of the free surfaces of each of the conductors a central element having a continuous surface of generally elliptical cross-section shape, covering the central element thus formed with a bundle of parallel reinforcing yarns such that the reinforcing yarns enclose the continuous surface of said central element, said continuous surface of the central element including the surface of the insulated central dielectric element and less than half of the peripheral surface of the wires, and then providing lapping and coating layers on said covered central element.

4,243,446

METHOD OF MAKING A LUFFA COMPOSITE

Jean M. Mathey, Saint Rambert d'Albon, France, assignor to Allibert Exploitation, Societe Anonyme, Grenoble, France

Filed Dec. 8, 1978, Ser. No. 967,851
Claims priority, application France, Dec. 14, 1977, 77 38538
Int. Cl.[3] B32B *17/00;* A43B *13/38;* D01B *1/10, 3/04*
U.S. Cl. 156—62.4 8 Claims



1. A method of forming a composite material of high absorbency and cushioning effect, comprising the steps of:

(a) disintegrating luffa sponges to form fibers therefrom;

(b) carding the fibers resulting from step (a);

(c) needling said fibers to a textile support of a nonwoven fabric to form a web;

(d) impregnating the needled web produced in step (c) with a mixture of thermoplastic and thermosetting synthetic resins;

(e) drying the resin-impregnated web formed in step (d); and

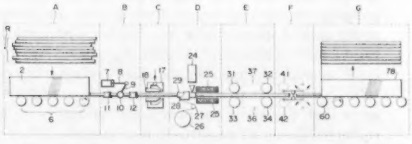
(f) calendaring the dried impregnated web to form a foil, the luffas being lubricated with an aqueous solution containing a lubricant prior to disintegration such that the fibers of the luffas prior to its disintegration absorb between 5 and 15% of their weight of water to at least partially swell the fibers, the luffa fibers formed by disintegration being mixed with substantially lighter fibers and the fiber mixture being carded in step (b).

4,243,447

METHOD FOR CONTINUOUSLY FORMING A COATING LAYER ON UNBONDED PC STEEL BARS

Tetsukazu Fukuhara, Hiratsuka, Japan, assignor to Neturen Company Ltd., Tokyo, Japan

Filed Dec. 28, 1978, Ser. No. 974,513
Claims priority, application Japan, May 19, 1978, 53-58874
Int. Cl.[3] B65H *81/00*
U.S. Cl. 156—64 5 Claims



1. A method for continuously coating unbonded PC steel bars, said method comprising:

continuously supplying steel bars along an axial feed path and regulating the intervals between said steel bars at an axial interval regulating station of the type including downstream and upstream pairs of spaced rollers and a spacer oscillating back and forth between first and second points along said path upstream and downstream of said upstream pair of rollers, said step of regulating comprising dislocating said upstream pair of rollers out of said path, detecting the passage of the trailing end of a first steel bar past a position upstream of said upstream pair of rollers and thereupon moving said spacer to said first point and positioning said spacer between said trailing end of said first steel bar and a leading end of a second steel bar, feeding said second steel bar at a speed V_0, moving said pairs of rollers at a speed V_1, moving said spacer at a speed V_2, such that $V_0 > V_1$, and $V_1 \approx V_2$, whereby with further movement said second steel bar abuts said spacer and said spacer abuts said first steel bar, thereby spacing said first and second steel bars at an interval equal to the size of said spacer in the direction of said path, then moving said upstream pair of rollers back to said path, then conveying said second steel bar by said upstream pair of rollers and conveying said first steel bar by said downstream pair of rollers, both at speed V_1, and when said spacer has been advanced to said second point, moving said spacer from between said steel bars, and thereafter conveying said steel bars with said interval therebetween;

then coating said steel bars only on parallel unthreaded portions thereof at a coating station utilizing an outflow path of a coating agent such as asphalt, epoxy resin or grease, said outflow path being cleared upon arrival of the leading end of said parallel portion of a steel bar and blocked upon arrival of the trailing end of said parallel portion;

then continuously wrapping the thus coated steel bars with an endless thermo-shrinking tape unwound from a tape unwinder at a taping station to thereby form an endless unit of steel bars joined by said tape; and

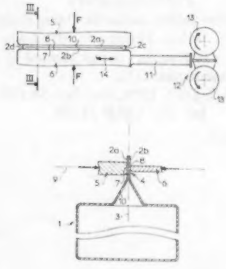
then separating the thus coated and taped steel bars by cutting the hollow taped portions between adjacent axially spaced steel bars.

4,243,448

METHOD AND APPARATUS FOR SEALING A TUBE OF THERMOPLASTICS MATERIAL BY WELDING

Gaston Fagniart, Valenciennes, and Jean-Pierre Lemaire, Maing, both of France, assignors to Societe Anonyme dite: Vacuum Capatainer International, Paris, France

Filed Mar. 23, 1979, Ser. No. 23,272
Int. Cl.[3] B29C *27/08;* B65B *51/10*
U.S. Cl. 156—73.5 4 Claims

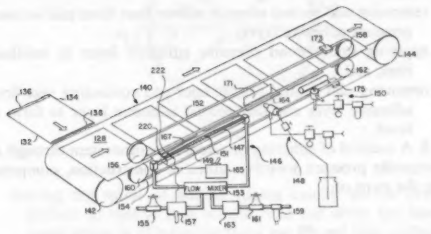


1. A method for sealing a tube of flexible thermoplastics material by welding, comprising flattening the tube in the area to be welded so as to give it the configuration of two walls placed face-to-face and connected by two flat folds extending parallel to the general direction of the tube in said area, pressing the two walls one against the other under pressure in said area, imparting alternating relative movement to the two walls in said area in a direction transverse to the general direction of the tube and parallel to the interface between said walls, whilst continuing to press them together, so as to bring about friction heating of the opposed faces of said walls in said area and their localized melting, then interrupting said movement and bringing about welding of the molten areas by cooling of the latter.

4,243,449
PROCESS FOR SEALING A PLURALITY OF POLYBUTYLENE SHEETS

Jeffrey L. Swartz, Brighton, Mass., assignor to Microseal Plastics Corporation, Chestnut Hill, Mass.

Continuation-in-part of Ser. No. 763,819, Jan. 31, 1977, abandoned. This application May 22, 1978, Ser. No. 907,994
Int. Cl.[3] B29C *25/00;* B32B *31/24*
U.S. Cl. 156—82 15 Claims



1. A process for sealing a plurality of polybutylene sheets, said process comprising:

(a) clamping edgewise portions of said polybutylene sheets between a pair of elements to establish a skirt;

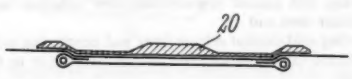
(b) heating said skirt to provide a molten weld having a tacky surface along an edge of said polybutylene sheets; and

(c) subjecting said weld to an aqueous solution of a surfactant in order to cause said weld to have a non-tacky surface.

4,243,450
METHOD OF MANUFACTURING TUBELESS TIRES FOR BICYCLES AND MOTORCYCLES

Jean-Paul Ferrary, Paris, France, assignor to Wolber, Soissons, France

Filed Nov. 28, 1978, Ser. No. 964,444
Claims priority, application France, Mar. 28, 1978, 78 08859
Int. Cl.[3] B29H *17/22;* B60C *5/02*
U.S. Cl. 156—123 R 2 Claims



1. A method of manufacturing a tubular tire for bicycles and motorcycles, said method comprising the steps of:

laying bead steel wires longitudinally on a first or inner casing sheet of a tire casing to be formed and adjacent the edges thereof;

folding the longitudinal marginal portions of said first or inner casing sheet around said bead wires in order to cover said wires completely;

laying a second or intermediate casing sheet on top of said first or inner casing sheet, the longitudinal edges of said second casing sheet projecting well beyond the in-turned longitudinal edges of said first casing sheet;

laying a casing tread on the thus superposed sheets;

shaping the tire assembly thus obtained by imparting a horseshoe configuration thereto, as seen in cross section;

introducing an uncured inner air tube into said casing;

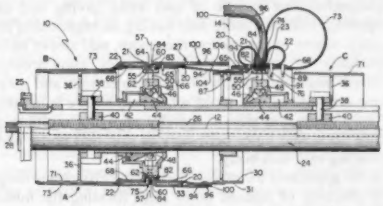
closing the tire by assembling by welding the side edges of said second or intermediate casing sheet projecting from said casing; and

vulcanizing the assembly, and thereby forming an enclosed tubular tire.

4,243,451
BUILDING AND SHAPING A TIRE

Jan C. Kortman, Mertzig, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Feb. 21, 1979, Ser. No. 13,593
Int. Cl.[3] B29H *17/24, 17/26*
U.S. Cl. 156—132 12 Claims



10. A method of building and shaping a tire comprising providing flat cylindrical surface means including a center envelope terminating in spaced planes normal to an axis and turnup bladders respectively abutting and extending oppositely outward coaxially from said envelope;

forming a precarcass band in flat cylindrical form on said surface means;

positioning a pair of preformed inextensible bead cores in radially and coaxially spaced relation to lie respectively in said planes and about said band;

expanding said band first at circumferential locations respectively coplanar with the terminii of said envelope and with the bead cores to initiate conformation of the band about said bead cores;

expanding portions of said band then at locations immediately adjacent to and respectively inward and outward of each bead core to roll said portions simultaneously progressively radially outward of each bead core to enclose at least partially each bead core respectively between said portions while moving said bead cores axially toward each other sufficiently only to accommodate such expansions;

thereafter shaping said band with said envelope between said bead cores to a toroidal form having a shape ratio of radial height to axial width at least approximately that of the tire after the same has been cured by applying to said envelope radially outward pressure and by concurrently moving said bead cores toward each other to the spacing therebetween desired in the tire after curing the same;

and subsequently completing and curing the tire.

4,243,452
METHOD AND APPARATUS FOR MAKING WRAPPED, MOLDED, TOOTHED BELTS

Kenneth D. Richmond; Joseph P. Miranti, Jr., both of Nixa, and Dewey D. Henderson, Springfield, all of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Sep. 14, 1979, Ser. No. 75,612
Int. Cl.[3] B29H *7/22*
U.S. Cl. 156—138 15 Claims

1. In a process for producing a molded V-belt having a tension section, a load-carrying section, and a compression section, said compression section having a plurality of projections and recesses therein, which comprises the steps of providing an uncured belt body and curing said belt body in a ring mold having at least one belt molding cavity within and between the rings of said mold for receiving the outer periphery and sides of said belt body, said cavity having one open side whereby the inner periphery of said belt body is exposed, said ring mold also having in association therewith means for confining said belt body within said cavity and for applying pres-

sure to said inner periphery of said belt body, the improvement which comprises:

(a) providing an uncured belt body;

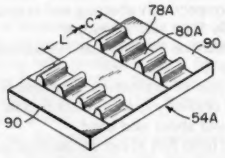
(b) assembling said belt body upon a ring mold having at least one cavity within and between the rings of said mold for receiving the outer periphery and sides of said belt body, said cavity having one open side whereby the inner periphery of said belt body is exposed, said mold having a plurality of axially-running projections and recesses in the circumferential surface of said mold having said cavity opening, said ring mold also having an expandable elastomeric sleeve in association therewith, said sleeve having a plurality of axially-running recesses and projections which align and mate with said projections and recesses, respectively, of said mold when said sleeve is inflated;

(c) expanding said sleeve, thereby applying molding pressure upon said inner periphery of said belt body; and,

(d) curing said belt body.

7. In an apparatus for molding endless belts comprising:

(a) a plurality of stacked mold rings forming the inner peripheral walls and side walls of annular cavities within and between said rings for receiving the outer peripheries and sides, respectively, of individual belts, the outer periphery



of said cavity extending between said side walls, being open whereby the entire inner peripheries of said belts are exposed;

(b) means for clamping said rings together;

(c) a substantially cylindrical elastomeric sleeve positioned in association with said rings and adapted to close the entire peripheral openings of said cavities and to contact the entire inner peripheries of said belts;

(d) a substantially cylindrical metal sleeve positioned in association with said elastomeric sleeve;

(e) means for sealing the ends of said elastomeric sleeve to said metal sleeve to provide an expansion chamber therebetween; and,

(f) means for admitting a fluid under pressure into said expansion chamber;

the improvement comprising a plurality of axially running projections and recesses on the mold-contacting surface of said elastomeric sleeve and a plurality of mateable recesses and projections in the sleeve-contacting peripheral surfaces of said mold rings, wherein said projections and recesses of said elastomeric sleeve mate with said recesses and projections, respectively, of said mold rings when said elastomeric sleeve is expanded into contact with said rings.

4,243,453

METHODS FOR APPLICATION AND USE OF A COMPOSITE PRESSURE SENSITIVE ADHESIVE CONSTRUCTION

Jack M. McClintock, Stow, Ohio, assignor to Morgan Adhesives Company, Stow, Ohio

Division of Ser. No. 837,828, Sep. 29, 1977, Pat. No. 4,157,410. This application May 14, 1979, Ser. No. 39,098

Int. Cl.[3] B32B *31/00*

U.S. Cl. 156—152 **6 Claims**

1. A method of adhering one item to another item through a composite pressure sensitive adhesive construction, comprising the steps of;

releasably attaching a first pressure sensitive adhesive layer to a first exterior release liner having a release coating thereon;

releasably attaching a central release liner to said first pressure sensitive adhesive layer, releasably attaching a second pressure sensitve adhesive layer to a second exterior release liner having a release coating thereon,

removing said first exterior release liner from said first pressure sensitive adhesive layer,

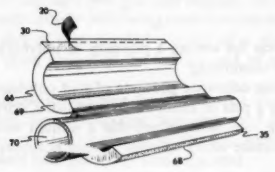
applying said first pressure sensitive adhesive layer to one item,

removing said second exterior release liner from said second pressure adhesive layer,

applying said second pressure adhesive layer to another item, and

removing said central release liner and contacting said first adhesive layer and said second adhesive layer to form a bond.

3. A method of adhering one item to another item through a composite pressure sensitive adhesive construction, comprising the steps of;



unwinding a self-wound pressure sensitive roll construction to release a second pressure sensitive adhesive layer from an external release liner, said construction having a first pressure sensitive adhesive layer releasably attached to both said external release liner and a central release liner, said construction also having said second pressure sensitive adhesive layer releasably attached to both the remaining side of said central release liner and the remaining side of said external release liner,

removing said exterior release liner to expose said first pressure sensitive adhesive layer,

applying said first pressure sensitive adhesive layer to one item,

applying said second pressure sensitive adhesive layer to another item and

removing said central release liner and contacting said first adhesive layer and said second adhesive layer to form a bond.

4,243,454

SOLAR HEATING PANEL FORMING APPARATUS AND METHOD

Richard O. Rhodes, San Francisco, Calif., assignor to Fafco, Inc., Menlo Park, Calif.

Division of Ser. No. 813,226, Jul. 5, 1977, abandoned. This application Jul. 14, 1978, Ser. No. 924,724

Int. Cl.[3] B29C *19/00*

U.S. Cl. 156—162 **5 Claims**

1. The method of forming cylindrical sections having walls formed of a continuous length of hollow tubing, comprising the steps of extruding the hollow tubing at a first predetermined speed, drawing the extruded hollow tubing at a second predetermined speed, said second speed being greater than said first speed by a predetermined speed differential, whereby the hollow tubing is sized, tensioning the continuous length of hollow tubing,

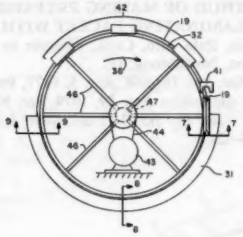
rotating a drum,

feeding the tensioned hollow tubing to said drum so that it winds in spiral fashion on the drum,

heating one side surface only of the hollow tubing to bring

the outer surface to a fusion point immediately prior to reaching the drum,

heating the opposite side surface only of the last wound turn of tubing in the spiral to bring the outer surface to a fusion point,



forcing the spiral of hollow tubing axially on the drum surface so that as it is wound onto the drum the fused outer surfaces of adjacent turns are forced into contact, whereby adjacent turns in the spiral are fused together, and cutting the hollow tubing at the periphery of the drum when the fused spiral reaches a predetermined width.

4,243,455

METHOD OF FORMING ELECTRODE CONNECTOR FOR LIQUID CRYSTAL DISPLAY DEVICE

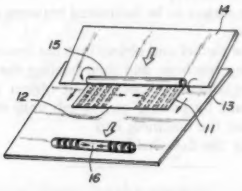
Hiroshi Shiba, and Katsuhiro Murata, both of Ohtsu, Japan, assignors to Nippon Graphite Industries, Ltd., Ohtsu, Japan

Filed Jul. 20, 1978, Ser. No. 926,341

Claims priority, application Japan, Jul. 29, 1977, 52-90505; Oct. 14, 1977, 52-123072

Int. Cl.[3] B65H *81/00*

U.S. Cl. 156—187 **2 Claims**



1. A method of forming an electrode connector for liquid crystal display device comprising the steps of:

(A) printing a plurality of parallel electroconductive strips with a predetermined width and spacing for the electrode connector on one side of a sheet of flexible polyester film with a special suspension ink consisting essentially of (a) 20–80% by weight of at least one fine powder selected from the group consisting of graphite powder having a grain size of 0.1–60μ, carbon black powder having a grain size of less than 0.1μ and silver powder having a grain size of 0.1–60μ, (b) 5–30% by weight of at least one binding material of rubber and thermoplastic resin selected from the group consisting of chloroprene rubber, chlorosulphonated rubber, polyurethane resin and polyester resin and (c) 15–80% by weight of at least one organic solvent selected from the group consisting of dimethyl formamide, dimethyl acetamide, diethyl carbitol, butyl carbitol, isophorone and turpentine oil, and having an apparent specific gravity of 0.9–1.9 and an apparent viscosity of 150–1,200 poise, and drying the printed ink on said polyester film;

(B) applying a hot-setting adhesive suspension consisting essentially of (i) 30–60% by weight of at least one hot-setting adhesive resin selected from the group consisting of chloroprene rubber-phenol resin, ethylene-vinyl acetate copolymer resin and polyester resin, (ii) 1–10% by weight of at least one fine powder selected from the group consisting of aluminum powder, iron oxide powder and sericite powder and (iii) 30–70% by weight of at least one organic solvent selected from the group consisting of toluene, xylene, ethyl acetate, isophorone, butyl carbitol and diethyl carbitol, and having an apparent specific gravity of 0.9–1.3 and an apparent viscosity of 100–800 poise to all over another side of said polyester film by spraying, and drying a thin layer of said adhesive suspension on said polyester film;

(C) cutting a rectangular piece having the desired size out of the resulting film having an adhesive coating layer on the surface in the step of (B); and

(D) putting a length of film with the adhesive layer coated on the upper side thereof on a flat plate heated at the temperature of 100° C.–200° C., and rolling a rubber tube consisting essentially of silicone rubber, chloroprene rubber or natural rubber, and having the size of 1.0–4.0 mm in outer diameter, 0.5–2.0 mm in inner diameter and 10–100 mm in length on said film in contact with the adhesive and in the direction of said vertical strips printed on the lower side so as to adhere said film around said rubber tube.

4,243,456

LAMINATING METHOD AND APPARATUS

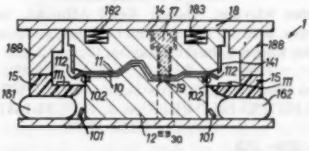
Franco Cesano, Pineroto, Italy, assignor to G.O.R. Applicazioni Speciali S.p.A., Turin, Italy

Filed Jun. 26, 1979, Ser. No. 52,106

Claims priority, application Switzerland, Jun. 28, 1978, 7027/78

Int. Cl.[3] B32B *31/00*; B32C *17/08*; B26D *5/08*; B29C *17/14*

U.S. Cl. 156—214 **12 Claims**



1. A method for producing a shaped stratiform and self-supporting laminate having a substantially rigid thermoplastic substrate and a coating layer of a flexible sheet material adhering on said substrate, said method comprising the steps of

(A) providing a molding press comprising (a) an upper mold member and a lower mold member, each of said mold members having a molding surface, said mold members being movable in a reciprocating manner relative to each other between a mutually distanced first position and a second position in which said molding surfaces are near each other to define a mold substantially corresponding with said shaped laminate; (b) a first cutting member on said lower mold member; (c) a second cutting member on said upper mold member; and (d) a generally annular peripheral member reciprocatingly movable relative to said upper and said lower mold members; said generally annular member having (1) a cutting edge for contact with said first cutting member to form a first cutting means and (2) a surface for contact with said second cutting member to form a second cutting means;

(B) holding said upper and said lower mold member in said distanced first position thereof while holding said annular member in a position removed from said first cutting member and said second cutting member;

(C) introducing a thermally plastified sheet of said thermoplastic substrate between said lower mold member and said annular member, said sheet extending over said mold-

ing surface of said lower mold member; and introducing a sheet of said flexible material for said coating layer between said upper mold member and said surface of said annular member; said sheet of said coating layer extending over said molding surface of said upper mold member and onto said surface of said annular member;

(D) moving said upper mold member towards said lower mold member into said second position for molding said substrate and said flexible sheet material while maintaining said annular member in a press-cutting position where said second cutting member contacts said surface of said annular member to peripherally cut said molded flexible sheet material and to produce predetermined free edge portions thereof;

(E) pressing said upper mold member against said lower mold member for laminatingly connecting said peripherally cut and molded sheet material with said molded and thermally plastified sheet of said thermoplastic substrate;

(F) moving said annular member from said sheet cutting position through a shear-cutting position where said cutting edge of said annular member cooperates with said shearing edge of said lower mold member to peripherally cut said sheet of said substrate while leaving said predetermined free edge portions of said flexible sheet to extend at least in part over edge portions of said cut substrate;

(G) moving said upper and said lower mold member into said mutually distanced first position and removing an integrally molded laminate formed of said flexible sheet material and said substrate and having laterally protruding edge portions of said flexible sheet material for subsequently covering at least a part of said edge portions of said substrate.

4,243,457

METHOD OF MOLDING PIPE JOINTS OF REINFORCED RESIN

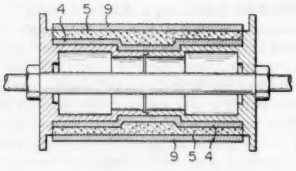
Masakatsu Mayumi, Osaka; Kenji Mitooka, and Sigeharu Fujiwara, both of Okayama, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 30, 1978, Ser. No. 938,100

Claims priority, application Japan, Sep. 2, 1977, 52-106058; Sep. 19, 1977, 52-126434[U]; Dec. 1, 1977, 52-144796

Int. Cl.³ B32B *33/00*

U.S. Cl. 156—245 **2 Claims**



1. A process for molding a pipe joint of a reinforced resin, which comprises

(1) forming an uncured inside surface layer composed of a resin-impregnated reinforced molding material on the peripheral surface of a core mold;

(2) coating a resin mortar on the inner surface of a split mold and molding the surface of the coated resin mortar by a former having a contour substantially corresponding with that of the inside surface layer;

(3) forming an incompletely cured interlayer composed of resin mortar by capping the split mold containing the molded resin mortar on the inside surface layer and removing the split mold after the curing of the resin mortar has proceeded to a certain extent;

(4) forming an uncured outside surface layer composed of a resin-impregnated reinforced molding material on the peripheral surface of the incompletely cured interlayer; and

(5) completing the curing of all the layers.

4,243,458

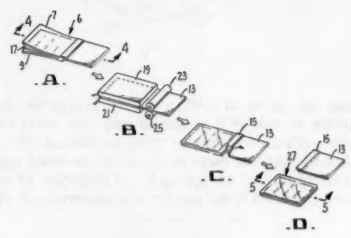
METHOD OF MAKING PREFABRICATED LAMINATING PACKET WITH TAB

Joe D. Giulie, Palo Alto, Calif., assignor to General Binding Corporation, Northbrook, Ill.

Division of Ser. No. 784,668, Apr. 5, 1977, Pat. No. 4,185,405. This application Aug. 29, 1979, Ser. No. 70,836

Int. Cl.³ B32B *31/20*; G09F *3/00*

U.S. Cl. 156—247 **9 Claims**



1. A method for laminating an object comprising the steps of:

(a) providing a laminating machine having a heating means and pressure means;

(b) providing a laminating packet having first and second sheets of a heat laminating material, said first and second sheets being of substantially the same size, lying over each other, and being connected together along one marginal edge, a detachable tab extending from the marginal edge away from the sheets;

(c) inserting an object to be laminated between the first and second sheets;

(d) inserting the packet and object into the heating means of the laminating machine, and then heating the packet;

(e) pulling the laminating packet and object through the pressure means by pulling on the tab until the packet is removed from the machine; and

(f) tearing away the detachable tab.

4,243,459

LOOSE LEAF BINDERS

Michael J. A. Lawes, 11 Jew St., Brighton, Sussex, BN1 1UT,, England

Division of Ser. No. 475,126, May 31, 1974, Pat. No. 4,138,143, which is a continuation of Ser. No. 100,310, Dec. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 21,652, Mar. 23, 1970, abandoned. This application Jan. 10, 1979, Ser. No. 2,700

Claims priority, application Canada, Mar. 19, 1970, 077831; Fed. Rep. of Germany, Mar. 10, 1970, 2011111; Mar. 10, 1970, 7008623[U]; France, Mar. 18, 1970, 70 09745; Italy, Mar. 12, 1970, 21847 A/70; Japan, Mar. 26, 1970, 45/24947; Netherlands, Jun. 9, 1970, 7008341; United Kingdom, Jan. 5, 1970, 400/70; Jul. 22, 1970, 35453/70

Int. Cl.³ B29C *19/02*

U.S. Cl. 156—272 **18 Claims**

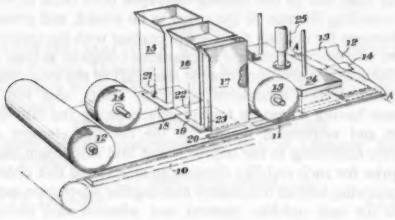
1. A method of manufacturing a loose leaf binder comprising the steps of

placing two rigid cardboard boards and a strip of semi-rigid weldable material between two sheets of flexible weldable material with the adjacent edges of the boards spaced from one another, and with the strip of semi-rigid material located between the boards,

enclosing a strip of cardboard in flexible weldable material

to form a second assembly comprising an inner spine and having two extending edges of weldable material,

welding the two sheets of flexible weldable material together about the periphery of the boards and the strip to form a first assembly comprising an outer spine and two covers,



urging the two spaced boards towards one another to cause the semi-rigid material to assume a curved shape, and

welding the second assembly to the first assembly by means of weld lines extending along the extending edges of the second assembly and closely adjacent to the adjacent edges of the boards in the first assembly to maintain the curved shape of the semi-rigid material.

4,243,460

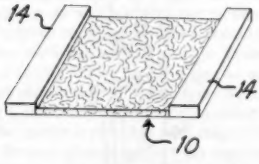
CONDUCTIVE LAMINATE AND METHOD OF PRODUCING THE SAME

Robert T. Nagler, Prairie du Sac, Wis., assignor to Lundy Electronics & Systems, Inc., Glen Head, N.Y.

Filed Aug. 15, 1978, Ser. No. 934,049

Int. Cl.³ B32B *31/24, 5/16;* G21F *1/12*

U.S. Cl. 156—275 **17 Claims**



1. A method of improving the conductivity of a laminate of resinous insulating material having dispersed therein metallic articles selected from the group consisting of metal-coated glass fibers, strips of aluminum foil, wire and flakes comprising the step of passing electrical energy through the laminate of sufficient strength to break down the dielectric resistance of the insulating material at points of contact of the metallic articles.

4,243,461

PROCESS FOR RELEASING LAMINATES

Richard F. Jaisle, Batesville, Ind., and Kenneth D. Bunkowski, Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

Filed Nov. 13, 1979, Ser. No. 93,414

Int. Cl.³ B32B *31/12, 31/20*

U.S. Cl. 156—288 **10 Claims**

1. A method of releasing laminates from one another in a heat and pressure consolidated press pack which comprises

(1) arranging a plurality of thermosetting synthetic resin-impregnated fibrous core sheets in superimposed relationship in groups of at least two stacks,

(2) separating said stacks from one another with a separator sheet comprising a web of phenol-formaldehyde resin-free paper having a water absorption of at least about 200 seconds, at least one side of which has been sized with a water-soluble salt of an alkaline earth metal or earth metal in an amount sufficient to provide a solids content of said salt distributed throughout the sized surface of said web ranging from about 0.001% to about 10%, by weight, based on the dry weight of the sized web, and then coated on its sized side with a film of a mixture of a salt of alginic acid and a triglyceride, lecithin or hydrolyzed lecithin

(3) consolidating said stacks of core sheets by the application of heat and pressure thereto and,

(4) separating the resulting laminates from one another at the locus of said separator sheet.

4,243,462

HEAT-CURABLE COMPOSITE SHEET AND PROCESS FOR FORMING THE SAME

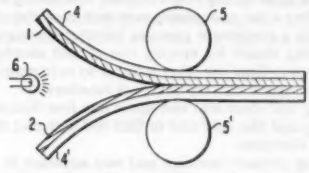
Yutaka Hori; Hidekazu Takahashi; Makoto Sunakawa; Ichiro Ijichi, and Kiyohiro Kamei, all of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

Continuation of Ser. No. 877,523, Feb. 13, 1978, abandoned, which is a division of Ser. No. 655,198, Feb. 4, 1976, Pat. No. 4,091,157. This application May 4, 1979, Ser. No. 35,967

Claims priority, application Japan, Mar. 27, 1975, 50/37611; Apr. 16, 1975, 50/46663

Int. Cl.³ B32B *7/00*

U.S. Cl. 156—310 **37 Claims**



1. A process for preparing a heat-curable multilayer composite sheet, which comprises coating a layer-forming material containing a normally solid or liquid free radical reactive unsaturated compound on a first strippable sheet to form an unsaturated compound material layer on the first strippable sheet, coating another layer-forming material containing a normally solid or liquid free radical initiator on a second strippable sheet to form a free radical initiator layer on the second strippable sheet, bringing the unsaturated compound material layer into contact with the free radical initiator layer, and bonding them to each other at a temperature at which the free radical initiator layer does not lose its free radical reaction initiating ability, essentially no free radical initiator being in said layer-forming material and essentially no free radical reactive unsaturated compound being in said another layer-forming material.

4,243,463

METHOD OF PRODUCING CROSS LAMINATES

Duggan J. Gash, Lower Froyle, near Bentley, England, assignor to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

Filed Oct. 25, 1977, Ser. No. 844,864

Claims priority, application United Kingdom, Oct. 27, 1976, 44725/76

Int. Cl.³ B29D *7/24;* B32B *31/02*

U.S. Cl. 156—324 **5 Claims**

1. A method of producing cross laminates from a set of substantially monaxially oriented, solid polyolefin film which comprises bonding together said set of films in a properly crossed position, annealing said cross laminate by subjecting it to a temperature within the range of from 60° to 180° C., but below the melting temperature of the lowest melting of the

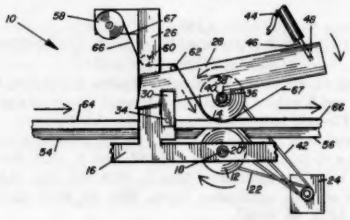
thermoplastic materials present therein, excluding any adhesive or extruded bonding layer, and then recovering a polyolefin film cross laminate having improved impact strength.

4,243,464

LAMINATING METHOD

Thomas M. Potchen, and Jessie M. Potchen, both of 2909 Banchory Rd., Winter Park, Fla. 32792

Filed Jan. 30, 1978, Ser. No. 873,266
Int. Cl.[3] B31F *5/00*
U.S. Cl. 156—324 **21 Claims**



1. A method for laminating a thin film onto a rough, porous surface of a sheet of wood, particle board, fiber board and the like of the type having resins therein, comprising the steps of:

providing a pair of opposing members, each disposed so as to define a continuous pressure line therebetween;

providing means for moving one of said members toward and away from the other member so as to permit variation of the space between said two members;

feeding said sheet into said space in a first direction;

feeding said film onto said surface and with said sheet in said first direction;

applying pressure between said two members in an amount substantially above 50 lbs. per lineal inch along said pressure line and against said film-sheet combination, and less than 400 lbs. per lineal inch in order to effect the desired bonding of said film to said sheet without destroying said sheet;

heating said film-sheet combination while between said members to render said resins amorphous; and wherein

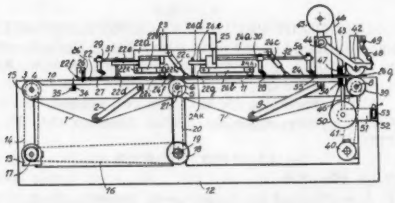
said amorphous resins are smoothed under pressure to calendar said rough, porous surface of said sheet to facilitate lamination of said film thereto.

4,243,465

APPARATUS FOR JOINING PIECES OF LAMINAR MATERIAL AND IN PARTICULAR PLYWOOD CORE STRIPS

Ilia Gozzi, Via Milano, 147, Cogozzo di Viadana, Mantova, Italy

Filed Jan. 11, 1979, Ser. No. 2,779
Int. Cl.[3] B27D *3/04*; B30B *5/04*
U.S. Cl. 156—362 **8 Claims**



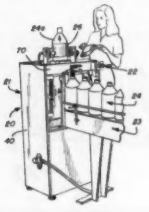
1. An apparatus for joining pieces of laminar material, in particular wooden strips for plywood cores, including a stationary frame structure, supported on said frame structure a plurality of successive coplanar conveyor floors having a longitudinal extension, each consisting of a series of coplanar and parallel conveyor belts arranged in spaced side-by-side relationship, said plurality of successive coplanar conveyor floors including at least one feeding conveyor floor and at least one crowding conveyor floor arranged after the feeding conveyor floor and having its conveyor belts moving at a speed slower than that of the feeding conveyor floor belts to allow the crowding thereon of the strips to be joined, and pressure mechanisms for holding the strips in contact with the conveyor floors, wherein the pressure mechanisms comprise at least one rod-like element arranged over at least part of the longitudinal extension of said successive conveyor floors, said rod-like element having a smooth lower surface facing the conveyor floors and suspension means for the rod-like element and wherein according to the improvement said suspension means comprise for each rod-like element an articulated link connection allowing limited translatory and angular adaptation movements for said rod-like element and wherein said pressure mechanisms include a controlled pressure fluid operated piston-cylinder group acting on said rod-like element allowing said rod element to adapt itself under controlled pressure against the strips to be joined entrained by the conveyor floors, the apparatus further comprising alignment means arranged between said rod-like elements for aligning the strips to be joined in a direction perpendicular to the longitudinal extension of the conveyor floors and jointing material applying means.

4,243,466

LABELING APPARATUS

Scott A. Lindee, Mokena, Ill., assignor to Sterling Manufacturing, Inc., Westmont, Ill.

Filed Jun. 29, 1979, Ser. No. 53,221
Int. Cl.[3] B65C *9/40*
U.S. Cl. 156—363 **9 Claims**



1. Apparatus for applying band labels to containers comprising: loading station means including a horizontal platform receptive of individual unlabeled containers, elevator means operable to elevate and lower said platform vertically between loading and labeling positions, clamp means mounted adjacent said platform for movement therewith and operable to hold individual containers in label receiving position on said platform, manually loaded label gripper means located remotely above said platform and operable to grip and hold a band label in stationary open condition substantially coaxially over a container on said platform, power actuated means for individually actuating said gripper means, clamp means and elevator means; control means for operating said power actuated means in predetermined sequence whereby to hold a label in open container receptive position above said platform, to elevate said platform and move an unlabeled container thereon upwardly through said open label, to open said gripper means and release said label to the exterior of said container as the latter moves upwardly therethrough, and to lower the labeled container to its original elevation at said loading station; power actuated conveyor means mounted adjacent said platform and having the upper run thereof in coplanar relation with said platform for receiving labeled containers discharged therefrom

in the lowered position of said elevator means, and periodically actuated stop gate means extending across said conveyor means for interrupting the movement of containers therealong; said stop gate means being positioned to locate an unlabeled container centrally of said platform when a previously labeled container is stopped against said gate means.

4,243,467

LABELING MACHINE, ESPECIALLY FOR BOTTLES

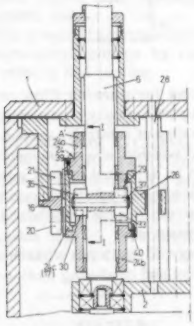
Rudolf Zodrow, Duesseldorf, Fed. Rep. of Germany, assignor to Jagenberg Werke Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 6, 1978, Ser. No. 922,464

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740656

Int. Cl.³ B65C *9/16*; B65H *3/20*

U.S. Cl. 156—568 **4 Claims**



1. In a labeling machine for bottles and the like, having a revolving carrier on which at least one pickup element having a convexly curved receiving surface is eccentrically journaled between the receiving surface and the center of curvature thereof, and having a drive for imparting an oscillatory movement to each pickup element for each revolution of the carrier, comprising a stationary cam fixedly mounted in the machine such that the carrier is rotatable with respect to the cam and a drive shaft for each pickup element, the improvement comprising: the stationary cam comprising a cylindrical cam track and means disposed around each drive shaft and axially movable thereabout for coupling the drive shaft for each pickup element with the cam track, each coupling means comprising a cam axially movable along the shaft including two opposite, parallel cam sections sloping axially along the periphary of the shaft, cam followers associated with the cam sections and connected to the drive shaft to be rotatable therewith, means for adjusting the distance between the two cam sections to eliminate any free play present between the two cam sections and the cam followers and a guide rod disposed parallel to the drive shaft and fixed to the carrier and along which the coupling means is axially slidable for preventing rotation of the coupling means around the shaft.

4,243,468

ROOFING MACHINE

Walter K. Boyd, Riverside, Calif., assignor to Mechanization Systems Company, Laguna Hills, Calif.

Filed Jun. 7, 1979, Ser. No. 46,216

Int. Cl.³ B44C *7/00*; B65N *75/38, 75/18, 17/02*

U.S. Cl. 156—577 **18 Claims**

1. A machine for laying a roll of sheet material wherein the roll has a central opening, said machine comprising:

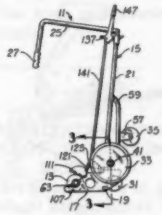
a frame;

wheel means adapted to rollingly engage a supporting surface;

means for mounting said wheel means on said frame for rotational movement about a first rotational axis whereby the machine can be rolled along the supporting surface;

expandable roll mounting means insertable into the central opening of the roll of sheet material;

means for radially expanding the roll mounting means into tight engagement with the roll;



first means for mounting said roll mounting means on said frame for rotation about a second rotational axis, said first and second rotational axes being parallel whereby the sheet material can be accurately unrolled from the roll as the machine moves along the supporting surface; and

a wheel means including an elongated roller for pressing the sheet material unrolled from the roll into the supporting surface.

4,243,469

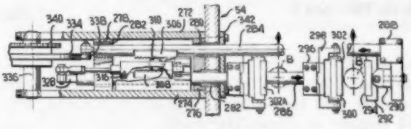
HEAT SEALER MECHANISM

Jack R. Evers, Torrance, and Michael I. Bauerkemper, Cerritos, both of Calif., assignors to Developak Corporation, Redondo Beach, Calif.

Filed Sep. 17, 1979, Ser. No. 76,448

Int. Cl.³ B30B *5/02*

U.S. Cl. 156—583.1 **10 Claims**



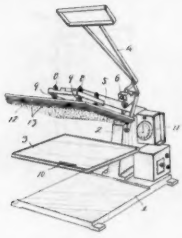
1. A heat sealer for closing bags and the like, said heat sealer comprising a pair of parallel members, means mounting said parallel members for separate axial movement, said parallel members having spaced adjacent ends facing in the same direction, a first bracket carried by one of said parallel members and having a first heat sealing member thereon facing in the same direction as said parallel member ends, a second bracket carried by the other of said parallel members and having a second heat sealing member thereon facing in the opposite direction and opposing said first heat sealing member, coupling means coupling said parallel members together for movement in unison and in opposite directions, pressure means reacting on one of said parallel members urging said heat sealing members under a controlled force, mechanical means for reacting on the other of said parallel members to urge said heat sealing members apart against the resistance of said pressure means, and drive means for actuating said mechanical means.

4,243,470

DEVICE FOR THERMALLY APPLYING STICKERS OR MARKS TO ARTICLES

Shigehiko Higashiguchi, 4-2 Honjyo 3-chome, Sumida-ku, Tokyo, Japan

Filed Jul. 24, 1978, Ser. No. 927,123
Claims priority, application Japan, Nov. 11, 1977, 52-136168[U]
Int. Cl.[3] B30B 5/02; D06F 71/40
U.S. Cl. 156—583.9 9 Claims



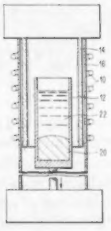
1. In a device for thermally applying a sticker or mark to an article, sticker application means having first and second platens with working faces relatively movable apart and together to apply heat and pressure to the sticker and article, at least one of the platens being heated, and the first platen having holding means on the working surface thereof to aid holding the article in place, characterized in that said holding means includes a plurality of needles extending toward said second platen on a majority of the area of the working surface of said first platen to engage the article.

4,243,471

METHOD FOR DIRECTIONAL SOLIDIFICATION OF SILICON

Theodore F. Ciszek, Salt Point, and Guenter H. Schwuttke, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 2, 1978, Ser. No. 902,206
Int. Cl.[3] C30B 11/02
U.S. Cl. 156—616 R 7 Claims



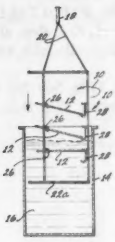
1. Method for growing silicon crystal comprising:
providing molten silicon in a graphite container;
said container having an average thermal expansion coefficient of between about 3.0 to 4.3×10^{6}°C.$^{-1}$ between 20° and 650° C., density of about 1.8 grams per cubic centimeter and grain size of less than about 50 microns; and
solidifying said molten silicon sequentially from the enclosed regions to the open region of said container to form crack-free silicon crystal.

4,243,472

METHOD FOR LIQUID PHASE EPITAXY MULTIPLE DIPPING OF WAFERS FOR BUBBLE FILM GROWTH

Charles F. O'Neill, Escondido, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Mar. 2, 1979, Ser. No. 16,883
Int. Cl.[3] C30B 19/04
U.S. Cl. 156—624 5 Claims



1. A batch process for growing films onto nonmagnetic substrates by liquid phase epitaxy comprising:
supporting a plurality of substrates spaced apart from each other in a tilted position, above one another and above a flux material to be deposited on said substrate,
lowering said spaced apart substrates into the flux material where said substrates assume a horizontal position as they enter said flux material,
continually moving said substrates while in said flux in an up and down motion and oscillating motion.

4,243,473

METHOD FOR DETECTING CRYSTAL DEFECTS IN SEMICONDUCTOR SILICON AND DETECTING SOLUTION THEREFOR

Hisayoshi Yamaguchi, and Itsuo Kuroyanagi, both of Annaka, Japan, assignors to Shin-Etsu Handatai Co. Ltd., Tokyo, Japan

Filed Dec. 20, 1977, Ser. No. 862,490
Claims priority, application Japan, Dec. 27, 1976, 51/157741
Int. Cl.[3] C30B 33/00; H01L 21/30, 21/306
U.S. Cl. 156—626 2 Claims

1. A method for detecting crystal defects in semi-conductor silicon comprising treating a preliminary mirror etched crystal of semi-conductor silicon for about 5 to 20 mintues with a detecting solution which is a mixture of about 50 percent hydrofluoric acid solution and concentrated nitric acid in a ratio of 1000 to 0.1–20 by volume added with an anionic surfactant, and thereafter, applying renewedly a mirror etching thereto.

4,243,474

PROCESS OF PRODUCING A PRINTED WIRING BOARD

Haruo Shirai; Yoshikatsu Tanaka, both of Kyoto; Zinzo Kosuga, and Kiyoshi Osaka, both of Hikone, all of Japan, assignors to Shin-Kobe, Electric Machinery Co., Ltd., Tokyo and Shirai Denshi Kogyo Co., Ltd., Kyoto, both of, Japan

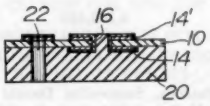
Filed Mar. 26, 1979, Ser. No. 23,883
Claims priority, application Japan, Mar. 28, 1978, 53-35689
Int. Cl.[3] B44C 1/22; C03C 15/00, 25/06; C23F 1/02
U.S. Cl. 156—630 10 Claims

1. A process of producing a printed wiring board having two electrically conductive circuit layers provided on an insulating laminate, said process comprising the steps of;
preparing a first insulating layer having a metal foil provided on each side of said first insulating layer;
forming a first electrically conductive circuit layer of prede-

termined pattern by treating one of said metal foils by printing and etching;

forming connecting through-holes in said first insulating layer for connecting said first electrically conductive circuit layer and the other metal foil to each other;

providing an electrically conductive member in said connecting through-holes so as to connect said first electrically conductive circuit layer and said other metal foil;



attaching a second insulating layer by heat and pressure to said first insulating layer so as to cover said first electrically conductive circuit layer whereby said insulating laminate is formed; and

thereafter forming a second electrically conductive circuit layer of predetermined pattern by treating said other metal foil by printing and etching.

4,243,475

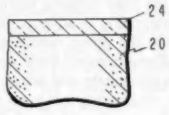
METHOD FOR ETCHING A PHOSPHORUS-NITROGEN-OXYGEN COATING

Pei-Ching Li, Hopewell Junction, N.Y., assignor to International Business Machines Corp., Armonk, N.Y.

Division of Ser. No. 772,804, Feb. 28, 1977, Pat. No. 4,172,158. This application May 25, 1979, Ser. No. 42,488

Int. Cl.[2] B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—643 **4 Claims**



1. A method of etching an amorphous phosphorus-nitrogen-oxygen coating comprising application of concentrated H_2SO_4 at elevated temperatures through a suitable masking layer.

4. A method of etching an amorphous-phosphorus-nitrogen-oxygen coating comprising using reactive ion etching through a suitable masking layer.

4,243,476

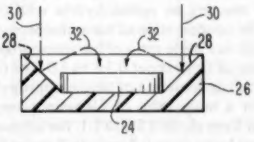
MODIFICATION OF ETCH RATES BY SOLID MASKING MATERIALS

Kie Y. Ahn, Chappaqua, and Daniel E. Cox, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,488

Int. Cl.[3] C23F *1/00*

U.S. Cl. 156—643 **7 Claims**



1. A method for etching a sample of material using a reactive gas species, including the steps of:

locating a sample within a chamber in the close proximity of a non-metallic solid source which surrounds said sample and which is capable of releasing said reactive gas species when struck by an ion beam created externally from said chamber and accelerated into said chamber, wherein said sample and said solid source are struck by said ion beam,

directly striking said sample and said solid source with said ion beam to release said reactive gas species from said solid source, said reactive gas species traveling to said sample,

etching said sample of material with said released gas species, which chemically reacts with said sample to form volatile species that leave said sample, thereby causing etching of said sample.

4,243,477

DEVICE FOR AN INSTALLATION OF A QUARTZ TUBE IN A DEVICE FOR CONCENTRATION OF MINERAL ACIDS

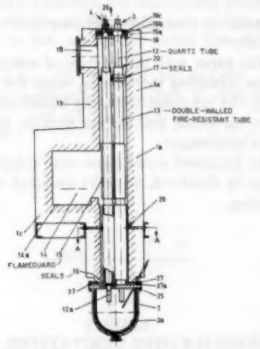
Hans Broberg, and Lars Douren, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed May 21, 1979, Ser. No. 41,140

Claims priority, application Sweden, Jun. 21, 1978, 7807069

Int. Cl.[3] B01D *1/22*

U.S. Cl. 159—13 A **16 Claims**



1. Apparatus for supporting an elongated evaporating tube in a system for purifying mineral acids, said apparatus comprising:

a double-walled tube unit having an outer flow channel for heating gases between its inner and outer walls, said evaporating tube being arranged within said tube unit and spaced therefrom to define an inner flow channel for heating gases between said evaporating tube and said inner wall;

means connecting said inner and outer flow channels in flow through relationship at the lower portion of said tube unit whereby flow of heating gases in said inner channel is opposite in direction to flow in said outer channel;

shoulder means extending from the lower end of said evaporating tube and having a spherical exterior contact surface;

seal means situated about said evaporating tube, against which said spherical contact surface seals;

a reduced diameter portion formed in the lower end of said evaporating tube below said spherical contact surface said portion extending through said seal means;

a collection vessel into which said reduced diameter portion extends; and

means for supporting said evaporating tube against radial movement near its upper end.

4,243,478
PROCESS FOR TREATING WASTE PAPER WITH HARDENED WATER

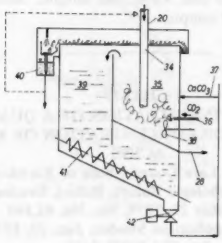
Lothar Pfalzer, and Siegbert Fischer, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 963,321

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1977, 2752413

Int. Cl.³ D21C 5/02

U.S. Cl. 162—4 **5 Claims**



1. A process for the treatment of waste paper, comprising the steps of:

mixing hardened water and other chemicals with paper to be dissolved;

treating the paper with the mixture of water and chemicals and then removing the treating water for recycling;

hardening the removed water by dissolving in the water calcium carbonate and carbon dioxide, thereby forming calcium bicarbonate;

mixing the hardened water again with other chemicals and paper to be dissolved, whereby recycled water is used in the mixing.

4,243,479
NOVEL STARCH ETHER DERIVATIVES, A METHOD FOR THE PREPARATION THEREOF AND THEIR USE IN PAPER

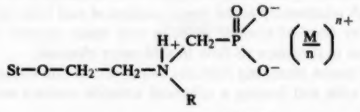
Martin M. Tessler, Edison, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

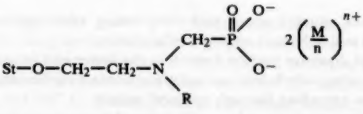
Filed Aug. 15, 1979, Ser. No. 66,526

Int. Cl.³ D21H 3/28

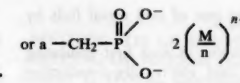
U.S. Cl. 162—175 **4 Claims**

1. A paper containing pigment and having dispersed therein as a pigment retention aid a starch ether derivative of the general structure





or a combination of (i) and (ii), wherein St—O represents a starch molecule, R is a C_1–C_6 alkyl group, a C_3–C_6 cyaloalkyl group,



group, M is a cation, and n is the valence of M and wherein said paper is prepared from a papermaking stock containing from about 0.05 to 2.0% of said starch derivative by weight of dry pulp.

4,243,480
PROCESS FOR THE PRODUCTION OF PAPER CONTAINING STARCH FIBERS AND THE PAPER PRODUCED THEREBY

Henry R. Hernandez, Somerville; Donald S. Greif, Bound Brook; Albert N. Barna, Plainfield, all of N.J., and Douglas S. Thornton, Himsdale, Mass., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Continuation-in-part of Ser. No. 670,360, Mar. 25, 1976. This application Oct. 17, 1977, Ser. No. 842,543

The portion of the term of this patent subsequent to Feb. 13, 1996, has been disclaimed.

Int. Cl.³ D21H 5/12

U.S. Cl. 162—141 **18 Claims**

1. In a process for manufacturing paper and paperboard comprising the steps of introducing an aqueous slurry of a fibrous pulp material onto a screen in such a manner that the water is removed thereby forming a sheet of consolidated fibers which, upon pressing and drying, yields the final paper product, the improvement comprising the step of replacing from 1 to 100% by weight of said pulp material with water-insensitive starch fibers of 10 to 500 microns in diameter, said fibers being produced by extruding a thread-like stream of a colloidal dispersion containing starch at 5–40% by weight solids, wherein said starch is present in an amount more than 50% by weight of the fiber forming ingredient, into a moving coagulating bath comprising an aqueous solution of a coagulating salt selected from the group consisting of ammonium sulfate, ammonium sulfamate, mono-basic ammonium phosphate, di-basic ammonium phosphate and mixtures thereof, the solution containing the coagulating salt in an amount at least sufficient to coagulate the starch, said starch fibers further characterized in retaining fiber integrity when dispersed in an aqueous medium.

4,243,481
SIZING COMPOSITIONS

David H. Dumas, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 9, 1978, Ser. No. 932,103

Claims priority, application United Kingdom, Aug. 19, 1977, 34909 Aug. 23, 1977, 35285

Int. Cl.³ D21H 3/02, 3/48

U.S. Cl. 162—158 **9 Claims**

1. In the method of internally or externally sizing paper with a hydrophobic cellulose-reactive sizing agent selected from the group consisting of ketene dimers, acid anhydrides, and organic isocyanates wherein there is employed in combination therewith a sizing accelerator, the improvement wherein there is employed as the sizing accelerator a cationic polymer selected from the group consisting of (1) a cationic polymer obtained by reacting an epihalohydrin with (i) a condensate derived by the condensation of bis-aminopropylpiperazine and dicyandiamide in a mole ratio of bis-aminopropylpiperazine to dicyandiamide of from about 0.5:1 to 1:0.5 or (ii) a condensate derived by the condensation of bis-aminopropylpiperazine and cyanamide in a mole ratio of bis-aminopropylpiperazine to cyanamide of from about 0.5:2 to 1:1, the amount of epihalohydrin employed being from 0.3 mole to 2 moles for each mole of amine nitrogen present in the condensate and (2) a cationic polymer obtained by the condensation of bis-aminopropylpiperazine and an epihalohydrin in a mole ratio of bis-aminopropylpiperazine to epihalohydrin of 1:3 to 1:8, the amount of

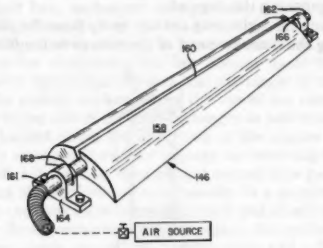
sizing accelerator employed being an amount sufficient to increase the off-the-machine sizing properties of the sizing agent.

4,243,482

FORMING PAPER USING A CURVED FIN TO FACILITATE WEB TRANSFER

Erkki O. Seppanen, 11104 NE. 29th, Vancouver, Wash. 98665

Filed Nov. 27, 1978, Ser. No. 963,974
Int. Cl.³ D21F *1/36, 1/38, 2/00*
U.S. Cl. 162—202 **6 Claims**



1. A process for facilitating the transfer of a continuous, wet, fibrous web from the outer surface of a foraminous conveyor having opposed inner and outer surfaces, said process comprising the steps of:

supporting a fin adjacent said inner surface of said conveyor at a position immediately upstream of a location where a continuous, wet fibrous web is to be transferred from the outer surface of said foraminous conveyor so that a surface of said fin gradually approaches said inner surface of said conveyor, said fin surface, in transverse cross-section being a smooth convex curve that diminishes in radius toward the downstream end of said fin;

extending said fin across the width of said conveyor; and

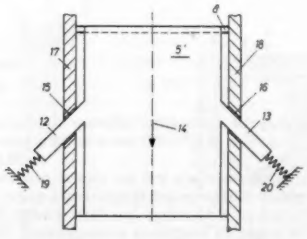
moving said conveyor for elevating gas pressure between said conveyor and said fin surface to urge said web off of said conveyor.

4,243,483

HEAD BOX FOR A PAPER MAKING MACHINE WITH A GUIDE SURFACE ADJUSTABLY TENSIONED

Christian Schiel, Heidenheim, and Heinrich Schmalstieg, Giengen, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Jun. 8, 1979, Ser. No. 46,663
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1978, 2825612
Int. Cl.³ D21F *1/02*
U.S. Cl. 162—343 **20 Claims**



1. A head box for spouting fiber suspension, for use in a paper making machine, or the like, said head box comprising:

said head box being defined by spaced apart top and bottom walls and by two opposite side walls; said head box having an outlet opening at one end thereof, which is surrounded and defined by said walls; a channel in and through said head box leading to said outlet opening;

a guide surface placed in said channel; said guide surface extending across said head box in the direction between said side walls; said guide surface being spaced away from the said top and bottom walls; said guide surface dividing said channel into two separate channels, with one of the two channels being at the side of the guide surface facing toward the top wall and with the other of the two channels being at the side of the guide surface facing toward the bottom wall; said guide surface having an upstream end, which is upstream in said head box with respect to the direction of flow through said head box; said upstream end of said guide surface being anchored in a fixed position to said side walls of said head box;

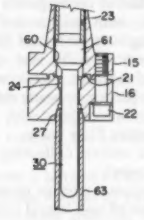
said guide surface having side edges; fastening means elastically fastening at least one said side edge in said head box; said fastening means being adjustably tensioned such that the pressure of flow, in a downstream direction, through said channel upon said guide surface in said head box is elastically resisted.

4,243,484

METHOD AND APPARATUS FOR USE TO EXCHANGE O-RING INTERPOSED BETWEEN IN-CORE HOUSING AND IN-CORE FLANGE IN NUCLEAR REACTOR

Teruaki Tsuji, and Shigeru Watanabe, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 29, 1978, Ser. No. 964,667
Claims priority, application Japan, Dec. 5, 1977, 52/145893
Int. Cl.² G21C *19/00*
U.S. Cl. 176—30 **5 Claims**



1. In apparatus for use to exchange an O-ring interposed between an in-core housing disposed at the lower end of a guide tube for an in-core monitor used for monitoring the operation of a nuclear reactor and an in-core flange attached to said housing, said in-core monitor being suspended from an upper grid disposed in the reactor pressure vessel towards said flange through a lower grid and said guide tube attached to said lower grid, the improvement which comprises a drain system adapted to be connected to the lower end of said flange for draining reactor water, a split cylindrical guide member adapted to be suspended from said upper grid after said in-core monitor has been removed from said upper grid, an operating mechanism to be inserted into said guide member, and a tubular repairing tool secured to the lower portion of said operating mechanism to extend into said guide member therealong as said operating mechanism is lowered, said operating mechanism comprising a base plate, a guide rod attached to said base plate and engaged with said upper grid for positioning said operating mechanism, frame plates attached to the lower surface of said base plate and extending downwardly therefrom into said guide member, a stational pawl attached to said frame plate, a movable pawl, and means secured to said frame plate for moving said movable pawl through a lever to be slidable on said stational pawl, said movable pawl being provided with a

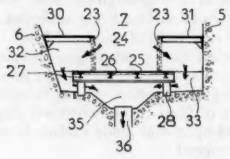
groove at its free end for securing the upper shank portion of said repairing tool.

4,243,485

RECIRCULATING DRAINAGE CHANNEL FOR THE SAFETY CIRCUITS OF A NUCLEAR REACTOR

Michel Chabin, Paris, France, assignor to Societe Franco-Americaine de Constructions Atomiques-Framatome, Paris, France

Filed Mar. 10, 1978, Ser. No. 886,915
Int. Cl.³ G21C *19/20*
U.S. Cl. 176—37 **2 Claims**



1. A recirculating drainage channel for collecting fluid for recirculation in the safety injection and spray circuit of a nuclear reactor, said channel being located in an annular gap between substantially vertical walls, wherein said fluid flows in a horizontal direction, said channel comprising:

a central horizontal solid lower panel arranged at the bottom of said gap;

a pair of lateral horizontal solid upper panels supported by the sides of the annular gap and arranged laterally of and above said central panel, said upper and lower horizontal panels being parallel to the direction of flow of the fluid;

a plurality of adjacent filter panels extending vertically between said lateral upper panels and said central lower panel to define with said central lower panel a central chamber having vertical lateral filter walls,

whereby said vertical walls, said upper horizontal panels said filter panels and the bottom of said gap define a pair of lateral chambers on opposite sides of said central channel each communicating with said central channel through respective filter walls;

means defining a central collecting chamber beneath said central lower panel;

substantially horizontal passage means communicating with a respective one of said lateral chambers and said central collecting chamber; and

outlet means for said central collecting chamber and for connection to said safety circuit; and wherein said lateral filter walls approach each other so that the cross section of said central channel decreases in the direction of the flow of fluid therealong.

4,243,486

METHOD OF MOUNTING FILTER ELEMENTS AND MOUNTING THEREFOR

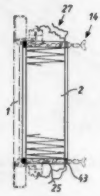
Gerhard M. Neumann, and Jochen Karelin, both of Berlin, Fed. Rep. of Germany, assignors to Delbag-Luftfilter GmbH, Berlin, Fed. Rep. of Germany

Division of Ser. No. 725,006, Sep. 20, 1976, Pat. No. 4,193,844. This application Sep. 29, 1977, Ser. No. 837,810
Int. Cl.³ G21C *19/20*
U.S. Cl. 176—37 **1 Claim**

1. Process for the insertion and exchange of filter elements for suspended matter for nuclear installations, where the filter elements having side walls are tightly enclosed in a frame by tightening devices, which can be swung down, which frame consists of frame parts, which are made of angle iron and which frame parts are tightly connected in rows next to each other and one above each other, and which frame is located in an opening in the brick wall, characterized by the fact, that the insertion and the exchange of the filter elements for suspended matter is performed from the clean air side, that during the insertion of the filter element a tube of plastic material, which encircles the circumference of the filter element, and which tube exceeds many times in its length the layer thickness of the filter element, is at its middle section tightly connected with the side walls, which form the border of the filter element, and then the open tube end which faces the frame is by squeezing tightly connected with a ring which surrounds the opening of the frame, the ring having first and second circumferential grooves spaced one behind the other when viewed in the direction of flow which frame serves to receive the filter element comprising the steps of:

swinging the tightening devices away from the filter;

pulling the outer free end of the tube over the filter;



heat sealing the outer free end of the tube;

loosening and pulling the filter away from the frame;

heat sealing the tube between the filter element and the frame;

installing a new filter element and tube by squeezing the new tube to the first groove overlapping a remaining portion of the old tube, in the second groove the middle portion of the new tube squeezed to the new filter element;

releasing the remaining portions of the old tube from the second groove and pulling the remaining portion into the new tube;

connecting the new filter tightly to the frame using the tightening device;

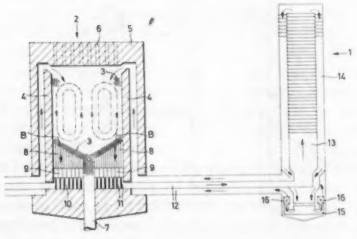
releasing the new tube from the first groove and reinstalling the new tube in the second grove.

4,243,487

GAS-COOLED HIGH TEMPERATURE NUCLEAR REACTORS

Fritz Schweiger, Hagen, Fed. Rep. of Germany, assignor to Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europäisches Unternehmen, Hamm-Uentrop, Fed. Rep. of Germany

Filed Apr. 25, 1978, Ser. No. 899,970
Claims priority, application Fed. Rep. of Germany, May 3, 1977, 2719613
Int. Cl.² G21C *9/00*
U.S. Cl. 176—38 **15 Claims**



1. In a gas-cooled, graphite-moderated high temperature nuclear reactor comprising a pressure vessel, a reactor core comprising fuel elements in said pressure vessel, graphite com-

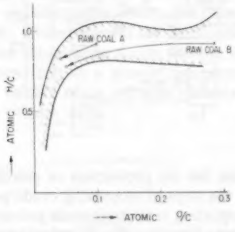
ponents in said pressure vessel, and a primary coolant gas circuit including a steam generator and coolant gas blowers, the improvement wherein said steam generator is disposed outside said pressure vessel and said steam generator includes a heat exchanger and means mounting said heat exchanger with at least a portion of said heat exchanger located at a level above the level of said reactor core, said primary coolant gas circuit including flow passage means for conveying the primary coolant gas between the reactor core and the heat exchanger, said flow passage means including a first flow passage located below the lower end of said reactor and below the lower end of said heat exchanger for conveying the hot coolant gases from the lower end of said reactor core to the lower end of said heat exchanger, an upwardly extending second flow passage connected at the lower end thereof to said first flow passage and containing at least a portion of said heat exchanger for conducting the hot coolant gases from said reactor core upwardly over said heat exchanger to the upper end of the passage located above the top of the reactor core with the upper end of the heat exchanger in said second flow passage located above the upper end of the reactor core, an upwardly arranged third flow passage for receiving the coolant gas after its passage through said second flow passage for conveying the coolant gas downwardly to a location below said heat exchanger and below the lower end of said core, and a fourth flow passageway for conveying the coolant gas to below the lower end of said reactor core; and a fifth flow passage located around said reactor core and connected at its lower end to said fourth flow passage for conveying the coolant gas upwardly to a location above said reactor core and for introducing the coolant gas into the reactor core for downward flow therethrough, said flow passage means arranged to generate a natural convection flow from said reactor core to said heat exchanger and back to said reactor core and for avoiding the reversal of flow direction and ensuring a sufficient cooling gas flow after reactor core shutdown or failure of the blowers.

4,243,488

COKE COMPOSITIONS AND PROCESS FOR MANUFACTURING SAME

Hidehiko Sugimura, and Keichiro Koba, both of Tokyo, Japan, assignors to Mitsui Coke Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 670,959, Mar. 26, 1976, abandoned. This application Jul. 17, 1978, Ser. No. 925,327
Claims priority, application Japan, May 21, 1975, 50/59767
Int. Cl.[2] C10B *53/04, 53/08;* **C10G** *1/04*
U.S. Cl. 201—6 **15 Claims**



1. A process for manufacturing a high-strength metallurgical coke, having a drum index (DI_{15}^{30}) of at least 92, comprising the steps of:

(a) dissolving at least one first coal component selected from the group consisting of bituminous coal, sub-bituminous coal, brown coal and lignite in a hydrocarbon solvent under hydrogenation conditions sufficient to depolymerize coal to produce a solution;

(b) distilling said solution and recovering a reformed coal as a distillation bottoms product;

(c) blending said reformed coal with a second coal component, which is a coal composition, comprising at least one high rank coal and which itself, upon carbonization, yields a high-strength metallurgical coke, having a drum index (DI_{15}^{30}) of at least 92; and

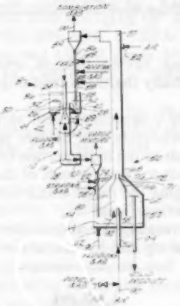
(d) subjecting said blended coal to coking conditions at a temperature sufficient to produce high-strength coke.

4,243,489

PYROLYSIS REACTOR AND FLUIDIZED BED COMBUSTION CHAMBER

Norman W. Green, Upland, Calif., assignor to Occidental Petroleum Corp., Los Angeles, Calif.

Continuation of Ser. No. 848,132, Nov. 3, 1977, abandoned, which is a continuation of Ser. No. 699,999, Jun. 25, 1976, abandoned. This application Nov. 13, 1978, Ser. No. 960,028
Int. Cl.[2] C10B *1/00;* **C10G** *1/00;* **C10B** *49/16*
U.S. Cl. 201—12 **60 Claims**



43. In a process for pyrolysis of particulate solid carbonaceous materials in which a particulate solid carbonaceous material is pyrolyzed by heat transferred thereto by a particulate source of heat to yield a particulate carbon containing solid residue as a product of pyrolysis and in which the particulate source of heat is formed by oxidizing at least a portion of the particulate carbon containing solid residue, the improvement which comprises forming the particulate source of heat by the steps of:

(a) transporting at least a portion of the particulate carbon containing solid residue formed by pyrolysis of the particulate solid carbonaceous material to a fluidized bed around a substantially vertically oriented, open conduit in open communication with a substantially vertically oriented riser, the conduit and riser comprising a first combustion zone;

(b) educting particulate carbon containing solid residue upward from the fluidized bed directly into the first combustion zone by injecting a transport gas upwardly into the conduit to transport particulate carbon containing solid residue to a second combustion zone; and

(c) generating the particulate source of heat by combustion of the particulate carbon containing solid residue in a combustion zone in the presence of oxygen.

4,243,490

RADIAL CUTTER TYPE CLEANING APPARATUS FOR COKE OVEN DOOR BOTTOM SURFACE

Akira Tsuzuki, Yokohama, and Atsushi Miura, Chiba, both of Japan, assignors to Koritsu Kikai Kogyo Company Limited, Tokyo, Japan

Filed Jul. 25, 1979, Ser. No. 60,458
Int. Cl.[3] C10B *43/04*
U.S. Cl. 202—241 **6 Claims**

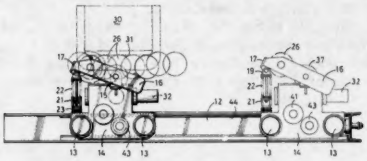
1. A door bottom surface cleaning apparatus comprising in combination:

a pair of parallel horizontal members;

a carriage actuable along said horizontal members and having front and rear portions;

a pair of rigid supporting plates having first and second ends, said plates linked at said first ends by a connecting plate and mounted at locations spaced from said first ends to the rear portion of the carriage for pivotal movement about a first axis transverse to the direction of carriage travel;

a radial cutter device mounted to the supporting plates adjacent said first ends for rotation about a second axis parallel to said first axis, said radial cutter device being



cylindrical and having thereon several cutting blades extending radially therefrom and aligned parallel to said second axis;

a pair of axially compressible coil spring devices having upper and lower ends, said devices pivotally mounted at said lower ends to the front portion of the carriage and at said upper ends to the first ends of the supporting plates, yieldingly urging the radial cutter device upwardly relative to the carriage; and

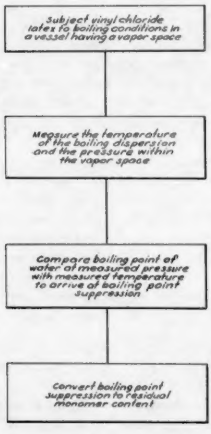
drive means for rotating the radial cutter device and moving the carriage along said horizontal members.

4,243,491

CONTINUOUS METHOD FOR DETERMINING RESIDUAL VINYL CHLORIDE CONTENT IN A BOILING AQUEOUS POLYMER DISPERSION

Eugene R. Moore, and John S. Kowalczyk, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 11, 1978, Ser. No. 923,593
Int. Cl.³ B01D *3/42*; C08F *6/10*
U.S. Cl. 203—2 **3 Claims**


Subject vinyl chloride latex to boiling conditions in a vessel having a vapor space
Measure the temperature of the boiling dispersion and the pressure within the vapor space
Compare boiling point of water at measured pressure with measured temperature to arrive at boiling point suppression
Convert boiling point suppression to residual monomer content

1. In a process for removing residual vinyl chloride monomer from an aqueous dispersion of a synthetic polymer prepared from vinyl chloride and, optionally, an ethylenically unsaturated comonomer having a boiling point greater than vinyl chloride, wherein the dispersion is subjected to boiling conditions while being maintained in a vessel having a vapor space above the liquid level of the dispersion, the improvement consisting of continuously monitoring the content of vinyl chloride monomer in the dispersion by the steps comprising:

(a) measuring the temperature of the boiling dispersion;

(b) measuring the pressure of the vapor above the boiling dispersion; and

(c) comparing the boiling point of water at the pressure measured in step (b) with the temperature measured in step (a) to ascertain the boiling point suppression of the dispersion.

4,243,492

PROCESS FOR PURIFYING CRUDE OLEFIN OXIDES

Toshio Yamamura; Yoshiro Osawa; Isao Ouchi; Nobuteru Oda; Mitsuyoshi Yamazaki, and Yukio Nishiyama, all of Yokohama, Japan, assignors to Showa Denko K.K., Japan

Filed Nov. 8, 1977, Ser. No. 849,535
Claims priority, application Japan, Nov. 15, 1976, 51/136338
Int. Cl.³ B01D *3/34*; C07D *301/32*
U.S. Cl. 203—8 **7 Claims**

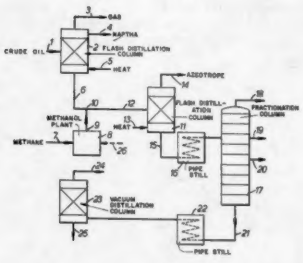
1. In a process for purifying a crude olefin oxide containing high-boiling ingredients by ordinary fractional distillation, the improvement which consists essentially of distilling the crude olefin oxide in the presence of an additive selected from the group consisting of NaCl and Na_2SO_4 said additive being added in an amount sufficient to maintain the pH of the liquid phase in the distillation system at 4 to 6.8, and separating the olefin oxide from the high-boiling ingredients.

4,243,493

PROCESS FOR TRANSPORTATION AND DISTILLATION OF PETROLEUM WITH METHANOL

Kurt Gruber, Monchen-Gladbach; Willi Keim, Aachen-Walheim, and Klaus Hentschel, Hanau-Gross Auheim, all of Fed. Rep. of Germany, assignors to Mannesmannröhren-Werke A.G., Düsseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 645,305, Dec. 29, 1975, abandoned.
This application Feb. 3, 1978, Ser. No. 874,760
Int. Cl.³ B01D *3/36*; C10G *7/00*; F17D *1/16*
U.S. Cl. 203—66 **6 Claims**



1. In a process for the production of petroleum products which includes the steps of recovering crude petroleum from an oil well, transporting recovered crude petroleum to a refinery location remote from the oil well, refining crude petroleum at the refinery location, and recovering a petroleum distillate fraction having utility as a motor fuel, and wherein a difficult to transport fossil fuel selected from natural gas, coal and a difficult to transport crude petroleum is available in the vicinity of the oil well, the improvement comprising converting said difficult to transport fossil fuel to methanol, admixing the resulting methanol with recovered crude petroleum in an amount to form a stable, pumpable emulsion consisting essentially of only methanol and crude petroleum, transporting the recovered crude petroleum to the remote refinery location in the form of said stable, pumpable, methanol-crude petroleum

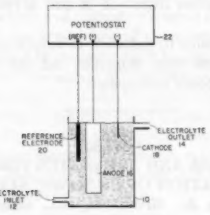
emulsion, breaking the emulsion at the refinery location by distillation, and recoverying from the distillation step a methanol-hydrocarbon azeotrope fraction having utility as a motor fuel, having a boiling point of about 63° C., and containing in addition to methanol at least 50% by weight of hydrocarbons boiling in the range of from about 70° C. to about 120° C.

4,243,494

PROCESS FOR OXIDIZING A METAL OF VARIABLE VALENCE BY CONTROLLED POTENTIAL ELECTROLYSIS

Olen L. Riggs, Jr., Bethany, and Dennis A. Brunsell, Oklahoma City, both of Okla., assignors to Kerr-McGee Corporation, Oklahoma City, Okla.

Filed Apr. 19, 1979, Ser. No. 31,319
Int. Cl.³ C25C *1/22*
U.S. Cl. 204—1.5 **8 Claims**



1. A process for changing the valence of a metal of variable valence state in a solution to a higher valence state which comprises:

providing an electrolytic cell containing an electrolyte comprising the solution containing the metal of variable valence and having an anode and a cathode positioned therein, said anode and cathode having an anode surface area to cathode surface area ratio of at least about 100:1 exposed to said electrolyte in said cell, said cell having no separate anode and cathode compartments within said cell;

providing a reference electrode in ionic contact with said electrolyte in said electrolytic cell; and

electrolyzing said electrolyte within said electrolytic cell by potentiostatic means wherein the electrochemical potential measured between the anode and the reference electrode is maintained in a preselected potential range to change the valence of the metal of variable valence state to a higher valence state.

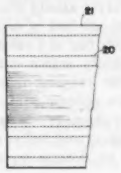
4,243,495

CONTINUOUS ELECTROFORMING OF METAL SHEETS WITH LINES OF WEAKNESS FOR BENDING AND/OR BREAK OUT PORTIONS

William A. Trott, 350 Waverley St., Winnipeg, Manitoba, Canada (R3M 3L3)

Filed Aug. 6, 1979, Ser. No. 63,948
Claims priority, application Australia, Aug. 18, 1978, PD5569
Int. Cl.³ C25D *1/04, 1/08;* B32B *25/06;* B23P *17/00*
U.S. Cl. 204—11 **7 Claims**

1. An electroformed flat sheet of metal having at least one line of weakness formed therethrough during the electroforming thereof, said line of weakness comprising a plurality of apertures formed through said sheet and constituting the removal of between 50% and 90% of the metal along the line of



weakness, said apertures being in the same plane as the sheet and flush with both surfaces thereof.

4,243,496

PROCESS FOR THE FORMATION OF PROTECTING COATINGS ON ZINC SURFACES

Robert H. Rosset, Paris, and Alain P. Jardy, Montrouge, both of France, assignors to Chaffoteaux et Maury, Montrouge, France

Filed May 18, 1979, Ser. No. 40,454
Claims priority, application France, May 19, 1978, 78 14950
Int. Cl.³ C25D *11/36*
U.S. Cl. 204—56 R **15 Claims**

1. A process for forming on a zinc surface a coating formed from zinc pyrophosphate, wherein the articles whose zinc surfaces are to be coated, are placed in contact with an electrolyte consisting essentially of pyrophosphate ions or phosphate ions capable of giving pyrophosphates, and are subjected to electrolytic surface oxidation of the zinc thereby causing precipitation of the zinc pyrophosphate.

4,243,497

PROCESS FOR THE ELECTROLYTIC PRODUCTION OF HYDROGEN IN AN ALKALINE

Edgard Nicolas, and Louis Bourgeois, both of Brussels, Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed Aug. 22, 1979, Ser. No. 68,521
Claims priority, application France, Aug. 24, 1978, 78 24757
Int. Cl.³ C25B *1/04, 1/34, 11/04*
U.S. Cl. 204—98 **9 Claims**

1. Process for the electrolytic production of hydrogen in an alkaline medium, in which process hydrogen is liberated in the gaseous form at the active surface of a cathode, characterised in that the cathode employed has an active surface which essentially consists of oxide compounds of the spinel type.

4,243,498

NICKEL ELECTROWINNING USING REDUCED NICKEL OXIDE AS A FLUIDIZED CATHODE

William G. Sherwood, Golden; Donald R. Hodges, Denver, both of Colo., and Cvetko Nikolic, Harvey, La., assignors to Amax Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 12,778, Feb. 16, 1979. This application Feb. 16, 1979, Ser. No. 12,777
Int. Cl.³ C25C *1/08*
U.S. Cl. 204—112 **21 Claims**

1. A process for extracting nickel from electrolytes in a fluid bed electrolysis cell which comprises:

establishing said nickel electrolyte bath in a fluid bed electrolysis cell comprising,

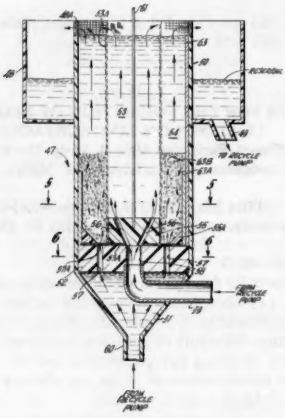
an anode disposed axially in said cell within an anode chamber surrounded by a porous diaphragm,

a cathode surrounding the porous diaphragm of said anode chamber, said cathode defining an annular cathode chamber relative to said porous diaphragm and containing a fluidizable cathode bed of nickel pellets of at least about 95% purity ranging in size from about 150

microns to 2000 microns isolated from said anode chamber,

maintaining a flow of said electrolyte through said cell by passing said electrolyte axially through said cell beneath said fluidizable cathode bed of nickel pellets at a rate to maintain said cathode bed in a substantially uniform fluidized electro-chemically active cathodic state at an expanded bed volume ranging from about 5% to 20% greater than its static volume, said electrolyte also passing through said anode chamber via said porous diaphragm,

electrolytically activating said cell at a current density ranging from about 0.5 to 25 amps/sq. meter to effect deposi-



tion of nickel from said solution onto the surface of said nickel pellets during which gas bubbles are formed by electrolysis,

causing said flow of electrolyte leaving said cell to collect in a reservoir to permit disengagement and removal of said gas bubbles from said electrolyte, recycling said electrolyte from said reservoir to said cell and through said anode and cathode chambers,

and continuing said electrolysis for a time sufficient to remove the nickel from said solution and provide a substantially high purity particulate nickel product containing at least about 95% nickel.

4,243,499

PROCESS FOR ELECTKOLYTIC RECOVERY OF ZINC FROM ZINC SULFATE SOLUTIONS

Seppo O. Heimala, Pori, Finland, assignor to Outokumpu Oy, Helsinki, Finland

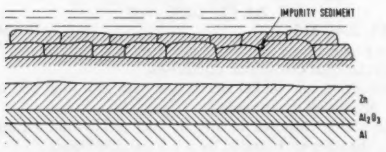
Filed Dec. 20, 1979, Ser. No. 105,557

Claims priority, application Finland, Dec. 22, 1978, 783984

Int. Cl.³ C25C *1/16*

U.S. Cl. 204—119 **5 Claims**

Zn-ELECTROLYSIS FROM A Co-Ni-CONTAINING SOLUTION



1. A process for electrolytic recovery of zinc from zinc sulfate solutions according to the electrowinning principle, using an aluminum cathode comprising using a zinc sulfate solution which is devoid of any organic substance and to which cobalt, nickel or both has been added, but at such a rate that the solution contains nickel less that 2 mg/l and cobalt less than 5 mg/l.

4,243,500

PRESSURE SENSITIVE ADHESIVES

Alfred E. Glennon, Anaheim, Calif., assignor to International Coatings, Co., Inc., Compton, Calif.

Continuation-in-part of Ser. No. 873,869, Jan. 31, 1978, abandoned. This application Dec. 4, 1978, Ser. No. 965,800

Int. Cl.³ C08F *2/50*; C08L *53/02*

U.S. Cl. 204—159.12 **41 Claims**

1. A composition for forming a pressure sensitive adhesive, comprising by weight:

about 100 parts monofunctional unsaturated acrylate ester monomer;

between about 50 and 250 parts essentially saturated thermoplastic tackifying resin polymer dissolved in said acrylate ester monomer;

between about 4 and 150 parts non-crystallizing elastomeric block copolymer dissolved in said acrylate ester monomer; and

initiator responsive to radiation to induce copolymerization of the acrylate ester monomer and the non-crystallizing elastomeric block copolymer.

4,243,501

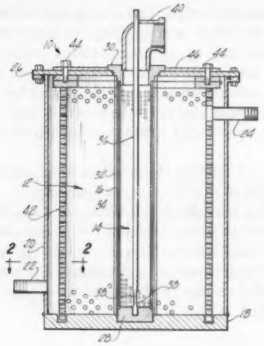
PROCESS AND APPARATUS FOR THE REGENERATION OF CHROMIC ACID BATHS

Leslie S. Wright, Jr., Greenfield, Ind., assignor to Michael Ladney, Jr., Grosse Pointe Shores, Mich.

Filed Mar. 30, 1979, Ser. No. 25,381

Int. Cl.³ B01D *13/02*; C02C *5/12*

U.S. Cl. 204—180 P **12 Claims**



1. In an electrochemical process of treating baths containing trivalent chromium, to convert such trivalent chromium to hexavalent chromium in which a bath containing trivalent chromium is circulated in the anode compartment of an electrodialysis cell, is in contact with an anode, and is separated from a cathode compartment having a cathode therein by a cation permeable membrane, the improvement comprising an aqueous catholyte mixture in contact with the cathode and consisting essentially of a mildly acidic and water soluble inorganic salt and electrically energizing the cell with a sufficient potential difference between the anode and the cathode such that any dissolved foreign metal ions in the used chromic bath will move through the membrane and into the catholyte mixture and trivalent chromium in the chromium bath is reoxidized into hexavalent chromium.

4,243,502

CATHODE FOR A REDUCTION POT FOR THE ELECTROLYSIS OF A MOLTEN CHARGE

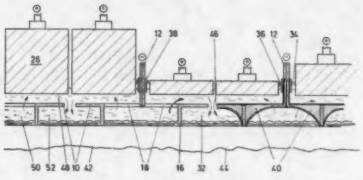
Tibor Kugler, Thayngen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jun. 11, 1979, Ser. No. 47,017

Claims priority, application Switzerland, Apr. 7, 1978, 7258/78

Int. Cl.³ C25C *3/08, 3/16, 7/02*

U.S. Cl. 204—243 R **26 Claims**



13. An electrolytic cell for the electrolysis of a molten electrolyte having anode and cathode elements and an electrolyte, in particular for the production of aluminum, said cell having exchangeable cathode elements each having at least one component thereof for the supply of electrical power connected to an active surface thereof which in turn is connected to a supporting plate thereof, wherein the cathode elements are connected electrically via said supporting plate by molten metal separated out in the electrolytic process, wherein at least some of the cathode elements have at least one recess or opening through which electrolyte can flow.

4,243,503

METHOD AND ELECTRODE WITH ADMIXED FILLERS

Donald F. Lieb, and Mary R. Suchanski, both of Mentor, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Aug. 29, 1978, Ser. No. 937,724

Int. Cl.³ C25B *11/16, 11/06, 1/36*

U.S. Cl. 204—290 F **5 Claims**

1. An electrode for use in an electrolytic cell comprising: a valve metal substrate selected from the group consisting of aluminum, molybdenum, niobium, tantalum, titanium, tungsten, zirconium, and alloys thereof having on the surface of at least a portion of said valve metal substrate, an electrocatalytically active coating selected from the group consisting of oxides of manganese, iron, cobalt, and nickel having incorporated therein electrically conducting particles selected from the group consisting of tin and antimony oxides, titanium oxides, manganese oxide and valve metals.

4,243,504

FLUOROVINYL ETHER POLYMERS

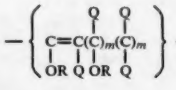
James C. Fang, Media, Pa., and Carl G. Krespan, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 2, 1979, Ser. No. 54,240

Int. Cl.³ C25B *13/08;* **C07C** *43/12*

U.S. Cl. 204—296 **30 Claims**

1. A fluorovinyl ether polymer consisting essentially of 60 to 99.9 mole percent of monomeric units $-CF_2CFY-$ and 0.1 to 40 mole percent of the structural units



wherein

each Y independently is F, H, Cl, Br, R_f or OR_f in which R_f is a perfluoroalkyl of 1–3 carbon atoms,

R is an alkyl of 1–8 carbon atoms, each Q independently is F or OR, and m is 0 or 1,

and having a number average molecular weight in the range of 1,000 to 1,000,000.

4,243,505

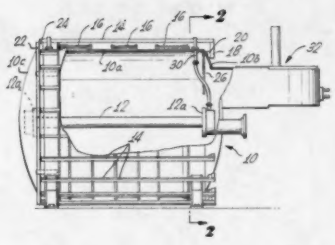
MAGNETIC FIELD GENERATOR FOR USE IN SPUTTERING APPARATUS

Alan S. Penfold, Playa del Rey, Calif., assignor to Telic Corporation, Santa Monica, Calif.

Filed Jun. 18, 1979, Ser. No. 49,455

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—298 **7 Claims**



1. Magnetic field generation apparatus for use in a magnetron sputtering system, said apparatus comprising:

a vacuum chamber having a generally cylindrical wall of non-magnetic material and end walls of magnetic material;

a post cathode disposed in said vacuum chamber and aligned with the longitudinal axis thereof;

a plurality of bars of magnetic material oriented in parallel relationship with the longitudinal axis of said vacuum chamber and arranged in a generally cylindrical pattern outside said cylindrical wall;

means for connecting corresponding ends of said bars to said end walls; and

solenoid means disposed between said cylindrical wall and said bars, to provide a magnetomotive force in a magnetic circuit that includes said bars, said end walls, and said post cathode, whereby a substantially uniform magnetic field is generated in the vicinity of said post cathode, and said solenoid means can be cooled by convection.

4,243,506

PLASMA-ETCHING APPARATUS

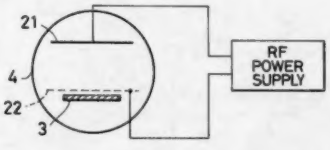
Kiyoji Ikeda, Hachioji, and Tetsuya Hayashida, Hinodemachi, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Aug. 23, 1979, Ser. No. 69,058

Claims priority, application Japan, Aug. 28, 1978, 53-103942

Int. Cl.³ B01K *1/00*

U.S. Cl. 204—298 **10 Claims**



1. In a plasma-etching apparatus comprising a reaction tube, first and second electrodes disposed in said reaction tube, a radio-frequency power source electrically connected to said first and second electrodes and support means in the reaction

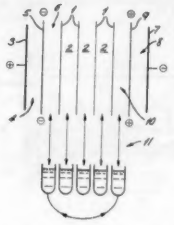
tube for supporting a work piece while it is etched by plasma generated by applying radio-frequency power across said first and second electrodes, the improvement wherein said first and second electrodes consist of a metallic plate and a mesh electrode, respectively, arranged substantially in parallel and in opposition to each other, and said support means for said work piece is placed outside the space between said mesh electrode and said metallic plate, adjacent said mesh electrode and spaced therefrom.

4,243,507

MEMBRANE ELECTROPHORESIS

Archer J. P. Martin, Elstree, and Frank Hampson, Lewes, both of England, assignors to National Research Development Corporation, England

Filed Feb. 15, 1979, Ser. No. 12,445
Int. Cl.³ G01N *27/40, 27/26*
U.S. Cl. 204—301 **17 Claims**



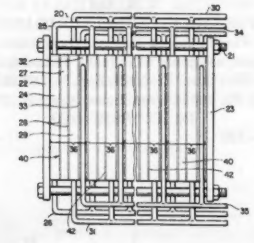
1. An electrophoresis membrane for use in electrophoresis according to the method of isoelectric focusing in which substances are transported into and out of the membrane across the thickness thereof, said membrane having attached to it acidic and basic groups in such relative amounts as to confer on the membrane a buffering capacity at a specific pH or over a specific narrow pH range at or in which the membrane is isoelectric whereby the tendency for electroendosmosis to occur during electrophoresis is reduced.

4,243,508

ELECTROCHEMICAL APPARATUS

Joseph P. Dankese, 17 Arcadia St., Dorchester, Mass. 02122

Filed Apr. 26, 1979, Ser. No. 33,394
Int. Cl.³ B01D *13/02;* C25B *13/04, 1/26*
U.S. Cl. 204—301 **18 Claims**



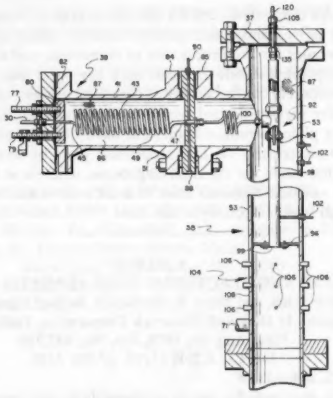
1. In electrochemical apparatus of the type comprising a stack of ion-exchange-moderated cells, the improvement wherein said ion-exchange members are formed of at least two polymeric components, a first component forming a chemically -resistant matrix structure comprising ion exchange functionally, the second component being a solid polymer material infused into said matrix formed by said first component in conjunction with solvent-etching of material from the matrix structure said membranes forming means compared to membranes of untreated matrix material, to substantially improve the performance of said stack by providing means to simultaneously decrease electroresistivity properties through the membranes in said stack while reducing permeability characteristics of said membranes to fluid.

4,243,509

COAL HYDROGENATION

Jerry E. Sinor, Longmont, Colo., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 689,002, May 24, 1976, abandoned.
This application Jan. 20, 1978, Ser. No. 871,163
Int. Cl.³ C10G *1/00;* B01J *8/18;* F27B *15/08*
U.S. Cl. 208—8 R **10 Claims**



1. A process of reacting a pulverized carbonaceous material with hydrogen at a desired hydrogenation reaction temperature in a single reaction zone to form desired gaseous and liquid hydrocarbon reaction products comprising:

introducing thermally separated streams of gas-entrained pulverized carbonaceous material and of hot hydrogen into the single reaction zone, the hot hydrogen stream being injected at a high velocity of at least several hundred feet per second in excess of that of the carbonaceous material stream so as to provide an intimately mixed reaction mixture having a high entrained flow cross-sectional throughput through said reaction zone of pulverized carbonaceous material in said hydrogen stream, said carbonaceous material and hydrogen having a residence time in the reaction zone substantially equal to the reaction time,

said introduced hot hydrogen stream prior to contact with the carbonaceous material being at a temperature several hundred degrees Fahrenheit above that of the carbonaceous material and that of the desired hydrogenation reaction temperature and in an amount sufficient to raise the temperature of said intimately mixed reaction mixture to said desired hydrogenation reaction temperature,

maintaining said high velocity entrained flow reaction mixture at said desired reaction temperature for a residence-reaction time of about 10 to 500 milliseconds whereby desired gaseous and liquid hydrocarbon reaction products are formed, and

immediately thereafter quenching the products of said reaction and collecting said reaction products.

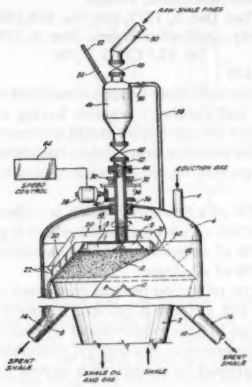
4,243,510
SHALE RETORTING PROCESS AND APPARATUS

Roland O. Dhondt, Long Beach, Calif., assignor to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 891,280, Mar. 29, 1978, Pat. No. 4,162,960. This application Mar. 26, 1979, Ser. No. 23,721 The portion of the term of this patent subsequent to Jul. 31, 1996, has been disclaimed.

Int. Cl.³ C10G *1/02;* **C10B** *31/02, 49/06, 53/06*

U.S. Cl. 208—11 R **16 Claims**



1. In a shale retorting process wherein a bed of granular crushed oil shale substantially free of particles having a diameter less than about 1/16 inch and above about 4 inches is passed upwardly through a retort, countercurrently to a preheated downflowing oxygen-free eduction gas to educe product oil and gas therefrom, and wherein spent shale is allowed to overflow by gravity from the top perimeter of said retort thereby forming the bottom portion of a free-standing cone-shaped bed of spent shale extending above the top of said retort through which said preheated downflowing eduction gas passes, the improved method for retorting raw crushed oil shale fines substantially free of particles having a diameter greater than about ¼ inch which comprises:

(a) leveling the top of said free-standing bed so as to form a free-standing truncated cone extending above the top of said retort and having a substantially horizontal, planar top surface and a cone-like inwardly sloping surface;

(b) feeding said raw shale fines onto said planar surface and controllably transporting said fines in a generally radial direction across said planar surface to said sloping surface, said raw shale fines beng fed at a rate no greater than about 15 weight percent of the total raw shale including fines being fed to said retort; and

(c) controlling the flow rate and temperature of said eduction gas so as to produce product gas and oil from said granular oil shale and said raw shale fines.

4,243,511
PROCESS FOR SUPPRESSING CARBONATE DECOMPOSITION IN VAPOR PHASE WATER RETORTING

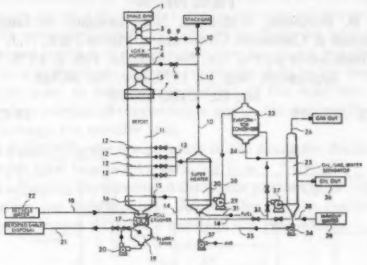
Victor D. Allred, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Mar. 26, 1979, Ser. No. 23,852

Int. Cl.³ C10G *1/02*

U.S. Cl. 208—11 R **7 Claims**

1. In a process for the recovery of organic values from oil shale containing alkaline metal carbonates by contacting said oil shale with superheated water vapor in a retort wherein the recovery of said hydrocarbon values is enhanced by contacting particles of said oil shale with said superheated water vapor at a superficial gas velocity of at least 10 cm per second and at a pressure in the range of from about 6.9 to about 1,034 kPaa and by providing said contact with said superheated water vapor at a temperature of from about 425° C. to about 510° C. to produce an effluent stream comprising superheated water vapor,



hydrocarbon vapors, hydrogen, and carbon oxides, the improvement comprising:

providing a carbon dioxide partial pressure during said contacting which is sufficient to effectively suppress thermal decomposition of said carbonates to oxides.

4,243,512
PROCESS FOR PREPARATION OF PITCH FOR PRODUCING CARBON FIBER

Ikuo Seo, Iwaki, Japan, assignor to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1979, Ser. No. 49,890

Claims priority, application Japan, Jun. 28, 1978, 53-78339

Int. Cl.³ C10C *1/00*

U.S. Cl. 208—39 **2 Claims**

1. A process for preparing a pitch suitable for use in producing carbon fibers comprising:

filtering at a temperature of 250° to 300° C. a heavy petroleum pitch, containing 20 to 45% by weight of compounds insoluble in benzene and having a softening point of 150° to 200° C., to remove fractions non-liquefying or infusible at a temperature higher than 250° to 300° C. therefrom using more than one filter net of meshes finer than 200 mesh at a rate of 0.5 to 2 g/min/cm^2,

introducing the thus filtered pitch at a temperature of 250° to 300° C. in the form of laminar flow of 1 to 30 mm in thickness into a vessel at a reduced pressure of 300 to 500 mm Hg of an inert gas to remove volatile fractions and bubbles from said filtered pitch in the laminar flow,

thereby obtaining a treated pitch containing substantially no bubbles and no components non-liquefying or infusible at a temperature of 250° to 300° C., containing less than 5% by weight of low-molecular weight fractions boiling at a temperature lower than 500° C.

4,243,513
METHOD OF INCREASING YIELD OF PETROLEUM PITCH

Samuel I. Horowitz, Verona, and Henry T. Ingram, Roselle, both of N.J., assignors to Witco Chemical Corporation, New York, N.Y.

Filed Nov. 10, 1975, Ser. No. 630,850

Int. Cl.³ C10G *37/06*

U.S. Cl. 208—44 **2 Claims**

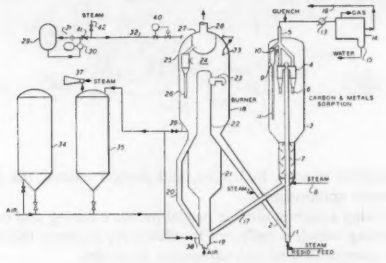
1. A process for making petroleum pitch from clarified slurry oil comprising refluxing the clarified slurry oil in the absence of air at temperatures from about 390° C. to about 410° C. for a period of from about 2 to about 10 hours whereby above 70% by weight of petroleum pitch based on the weight

of clarified slurry oil is recovered, said pitch having a Mettler Softening Point in the range of about 70°–130° C.

4,243,514
PREPARATION OF FCC CHARGE FROM RESIDUAL FRACTIONS

David B. Bartholic, Watchung, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Menlo Park, N.J.

Continuation-in-part of Ser. No. 875,326, Feb. 6, 1978. This application May 14, 1979, Ser. No. 38,928
Int. Cl.³ C10G *25/09*
U.S. Cl. 208—91 **15 Claims**



1. In a process for preparing premium products from petroleum hydrocarbon feedstock having a substantial Conradson Carbon number and metals content, the improvement which comprises contacting said feedstock in a decarbonizing zone with an inert fluidizable solid material having a micro activity for catalytic cracking not substantially greater than **20** at low severity, including a temperature of at least 900° F., for a period of time less than that which induces substantial thermal cracking of said feedstock, at the end of said period of time separating from said inert solid a decarbonized hydrocarbon fraction of reduced Conradson Carbon number and metals content as compared with said feedstock, reducing temperature of the said separated fraction to a level below that at which substantial thermal cracking takes place, subjecting said inert solid after contact with said feedstock to air at elevated temperature in a separate burning zone to thereby remove combustible deposit from said solid and heat the solid, and recycling at least a portion of said inert solid from the burning zone to the decarbonizing zone for further decarbonizing of said feedstock, at least a portion of said inert solid so recycled to the decarbonizing zone being formed in said burning zone by spraying a slurry of precursor of said inert solid into said burning zone under conditions such that the heat produced by burning of said combustible deposit on cycled inert solid material causes the sprayed material to form solid droplets of inert solid particles of fluidizable particle size.

4,243,515
REFORMING PROCESS

Roy T. Mitsche, Wauconda, and George N. Pope, McHenry, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 880,749, Feb. 23, 1978, abandoned, which is a continuation-in-part of Ser. No. 788,376, Apr. 18, 1977, Pat. No. 4,098,874. This application May 24, 1979, Ser. No. 42,264
Int. Cl.³ C10G *35/08*
U.S. Cl. 208—138 **10 Claims**

1. A process for reforming a naphtha feedstock which comprises contacting said feedstock at reforming conditions with a catalyst comprising from about 0.01 to about 2 wt.% platinum group metal and from about 0.01 to about 5 wt.% Group IV-A metal selected from the group consisting of germanium and tin composited with an alumina support prepared by admixing a finely divided alpha-alumina monohydrate with an aqueous ammoniacal solution having a pH of at least about 7.5 and forming a stable suspension, commingling a metal salt of a strong acid with said suspension and converting the suspension to an extrudable paste or dough, extruding the paste or dough, drying, and thereafter calcining the extruded alumina at a temperature of from about 450° to about 850° C.

4,243,516
CATALYTIC HYDROREFORMING PROCESS

Germain Martino, Poissy, and Jean Miquel, Paris, both of France, assignors to Societe Francaise des Produits pour Catalyse, Rueil-Malmaison, France

Filed Dec. 6, 1977, Ser. No. 858,126
Claims priority, application France, Dec. 6, 1976, 76 36918
Int. Cl.³ C10G *35/08*
U.S. Cl. 208—139 **8 Claims**

1. In a catalytic reforming process conducted under reforming conditions and yielding a gasoline having a clear octane number of at least 103, the improvement wherein the process is conducted in the presence of a catalyst containing an alumina carrier and, expressed by weight with respect to the catalyst carrier:

(a) 0.2 to 0.4% of a first metal which is ruthenium,
(b) 0.03 to 0.08% of a second metal which is palladium,
(c) 0.07 to 2% of a third metal which is indium, and
(d) 0.1 to 10% of a halogen.

3. In a catalytic reforming process conducted under reforming conditions and yielding a gasoline having a clear octane number of at least 103, the improvement wherein the process is conducted in the presence of a catalyst containing an alumina carrier and, expressed by weight with respect to the catalyst carrier:

(a) 0.2 to 0.4% of a first metal which is ruthenium,
(b) 0.03 to 0.08% of a second metal which is osmium,
(c) 0.07 to 2% of a third metal which is indium, and
(d) 0.1 to 10% of a halogen.

5. In a catalytic reforming process conducted under reforming conditions and yielding a gasoline having a clear octane number of at least 103, the improvement wherein the process is conducted in the presence of a catalyst containing an alumina carrier and, expressed by weight with respect to the catalyst carrier:

(a) 0.2 to 0.4% of a first metal which is rhodium,
(b) 0.03 to 0.08% of a second metal which is ruthenium,
(c) 0.07 to 2% of a third metal which is indium, and
(d) 0.1 to 10% of a halogen.

6. In a catalytic reforming process conducted under reforming conditions and yielding a gasoline having a clear octane number of at least 103, the improvement wherein the process is conducted in the presence of a catalyst containing an alumina carrier and, expressed by weight with respect to the catalyst carrier:

(a) 0.2 to 0.4% of a first metal which is iridium,
(b) 0.03 to 0.08% of a second metal which is ruthenium,
(c) 0.07 to 2% of a third metal which is indium, and
(d) 0.1 to 10% of a halogen.

4,243,517
INTERNAL METHOD FOR REDUCING TRANSVERSE OXYGEN GRADIENTS IN FCCU REGENERATION

Edward C. Luckenbach, Mountainside, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 867,782, Jan. 3, 1978, abandoned. This application Jul. 18, 1979, Ser. No. 58,490
Int. Cl.³ C10G *11/18*
U.S. Cl. 208—164 **17 Claims**

1. In a fluidized catalytic cracking process which comprises:

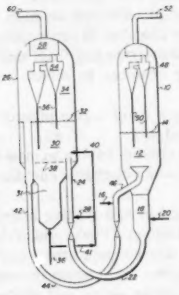
(A) contacting a hydrocarbon feedstock with cracking catalyst in a reaction zone under cracking conditions to produce cracked hydrocarbon vapors and coke contaminated catalyst;

(B) stripping said coke contaminated catalyst with a stripping gas to remove volatile hydrocarbons therefrom,

thereby forming a mixture of coke contaminated catalyst and unstripped volatile hydrocarbons;

(C) passing the mixture through a transfer line having a terminus in the dense phase catalyst bed of a regeneration zone;

(D) regenerating said coke contaminated catalyst by contacting said mixture in the regeneration zone under regeneration conditions with an upwardly flowing oxygen-containing regeneration gas, the catalyst in the regeneration zone being fluidized by the upward flow of said regeneration gas to form a dense phase catalyst bed and a dilute catalyst phase, the improvement which comprises providing additional oxygen to the localized area of the terminus of the transfer line in the dense phase catalyst bed to at least partially combust the volatile hydrocarbons in the mixture.



4,243,518

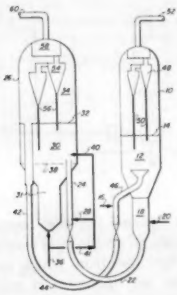
EXTERNAL METHOD FOR REDUCING TRANSVERSE OXYGEN GRADIENTS IN FCCU REGENERATION

Edward C. Luckenbach, Mountainside, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 866,496, Jan. 3, 1978, abandoned. This application Jul. 18, 1979, Ser. No. 58,491

Int. Cl.³ C10G *11/18*

U.S. Cl. 208—164 **19 Claims**



1. In a fluidized catalytic cracking process comprising:

(A) contacting a hydrocarbon feedstock with cracking catalyst in a reaction zone under cracking conditions to produce cracked hydrocarbon vapors and coke contaminated catalyst;

(B) contacting the coke contaminated catalyst with a stripping gas to partially remove volatile hydrocarbons therefrom, thereby forming a mixture of coke contaminated catalyst and unstripped volatile hydrocarbons;

(C) passing the mixture from the reaction zone through a transfer line into the dense phase catalyst bed of a regeneration zone having a dense phase catalyst bed and a dilute catalyst phase;

(D) regenerating the coke contaminated catalyst by contacting the mixture under regeneration conditions with an oxygen-containing regeneration gas, the improvement which comprises: injecting a minor portion of the regeneration gas into the transfer line to at least partially combust the remaining volatile hydrocarbons from the mixture, the minor portion of the regeneration gas being injected into the transfer line at a point relatively close to the regeneration zone to minimize the effect of the injection of the minor portion of regeneration gas on the catalyst flow rate through the transfer line;

(E) monitoring the temperature of the gas in the dilute phase in at least two points; and,

(F) adjusting the amount of the minor portion of the regeneration gas injected into the transfer line to regulate the temperature difference between the two points.

4,243,519

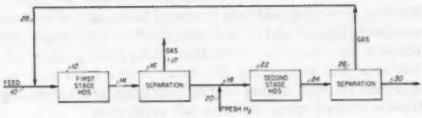
HYDROREFINING PROCESS

James J. Schorfheide, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Feb. 14, 1979, Ser. No. 12,217

Int. Cl.³ C10G *65/04, 65/06*

U.S. Cl. 208—210 **13 Claims**



1. A naphtha hydrorefining process which comprises:

(a) contacting a feed consisting essentially of a sulfur-containing naphtha in a first hydrorefining stage with a hydrorefining catalyst and with a hydrogen-containing gas consisting essentially of a hydrogen-containing gas recycled from step (d) at hydrorefining conditions including a temperature ranging from about 500° to about 700° F., to produce a first hydrorefining stage effluent comprising a partially desulfurized normally liquid naphtha product and a gaseous product comprising hydrogen and hydrogen sulfide;

(b) separating at least a portion of the hydrogen sulfide from said first hydrorefining stage effluent;

(c) contacting at least a portion of the first hydrorefining stage effluent resulting from step (b) in a second hydrorefining stage at hydrorefining conditions with added fresh hydrogen in the presence of a sulfided hydrorefining catalyst to produce a second stage hydrorefining effluent comprising a normally liquid naphtha having a decreased sulfur content relative to said partially desulfurized naphtha and a hydrogen-containing gas comprising hydrogen sulfide, and

(d) recycling at least a portion of the hydrogen-containing gas including said hydrogen sulfide of step (c) to said first hydrorefining stage.

4,243,520

METHOD FOR SEPARATION OF LARGE SIZED SALT CONTAINING MINERALS

Stoyan I. Denev, and Nadejda G. Davcheva, both of Sofia, Bulgaria, assignors to Knippi "Niproruda", Sofia, Bulgaria

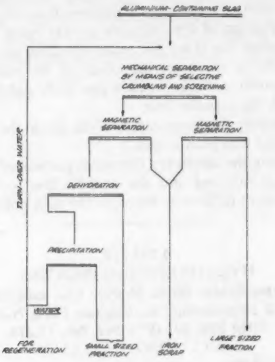
Filed Aug. 10, 1978, Ser. No. 932,654

Int. Cl.³ B03B *7/00*

U.S. Cl. 209—10 **2 Claims**

1. A method of separation of large sized minerals containing salt, low hardness mineral inclusions and iron products, com-

prising subjecting said minerals to a preliminary screening under intensive water-spraying conditions to divide said minerals into an unscreened fraction and a first screened fraction, selectively and mechanically crumbling said unscreened fraction to crumble said low hardness mineral inclusions, and further screening under intensive water spraying conditions said selectively crumbled unscreened fraction to divide said



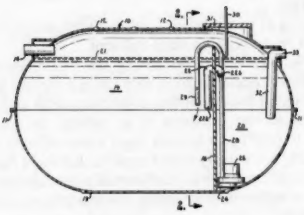
minerals into a second screened fraction and an unscreened fraction removing said iron products from each of said second screened fraction and of said selectively crumbled unscreened fraction by magnetic separation, dehydrating each of said fractions and recovering the spray water from said second screened fraction during said dehydrating, and subjecting the thus-recovered spray water to salt extraction.

4,243,521

METHOD AND APPARATUS FOR AEROBICALLY TREATING WASTEWATER

Charles E. Tharp, Lake Saint Louis, and Clark M. Campbell, Columbia, both of Mo., assignors to Environmental Dynamics, Inc., Columbia, Mo.

Filed Apr. 9, 1979, Ser. No. 28,051
Int. Cl.³ C02F 3/20
U.S. Cl. 210—626 **8 Claims**



1. A process of treating wastewater comprising the steps of:
directing the wastewater to an aeration chamber;
aerating the wastewater in said aeration chamber to aerobically treat same;
transferring the aerobically treated wastewater to a settling chamber wherein the sludge settles;
pumping the sludge through a sludge return passage extending from said settling chamber to said aeration chamber to return the sludge to the aeration chamber for further aeration therein;
drawing outside air into said sludge return passage by aspiration effected by the flow of sludge through said passage, thereby mixing the outside air with the sludge before the sludge reaches the aeration chamber; and
discharging the aerobically treated wastewater from said settling chamber to a drainage area.

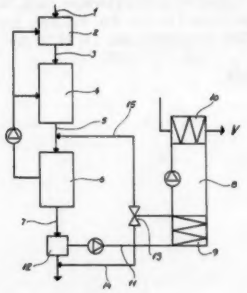
4. Apparatus for aerobically treating wastewater comprising:
a tank having an inlet for receiving wastewater and an outlet for discharging treated liquid;
partition means separating said tank into an aeration chamber communicating with said inlet and a settling chamber communicating with said outlet;
aeration means for effecting aeration of the wastewater in said aeration chamber to aerobically treat same;
a transfer conduit extending from said aeration chamber to said settling chamber to direct treated liquid therebetween;
means defining a sump region in said settling chamber for receiving sludge;
a sludge return conduit having an intake end disposed in said sump region and a discharge end disposed in said aeration chamber;
a pump disposed in said settling chamber and operable to pump sludge into said intake end of the return conduit and through the return conduit from said sump region to said aeration chamber for aeration therein; and
means for supplying air to said sludge return conduit to aerate the sludge flowing therethrough.

4,243,522

METHOD AND APPARATUS FOR UTILIZING HEAT CONTENT IN WASTE WATER

Poul E. Ter-Borch, Roskilde; Per Baumgarten, Hvidovre, and Ernst K. Jorgensen, Valby, all of Denmark, assignors to I. Kruger A/S, Denmark

Filed Jun. 21, 1979, Ser. No. 50,537
Claims priority, application Denmark, Jun. 22, 1978, 2820/78
Int. Cl.³ C02F 3/00
U.S. Cl. 210—774 **3 Claims**



1. A method for utilizing the heat content of waste water which has passed through a biological waste water purification plant at a variable flow rate from which an average flow rate can be obtained, the last operation in said plant comprising directing the waste water into a sedimentation tank wherein the waste water is substantially purified, comprising the steps of:
directing a flow of the substantially purified waste water from the sedimentation tank to the evaporator of a heat pump having a capacity substantially corresponding to the average flow rate so that the evaporator is heated; and
during periods in which the flow rate of the waste water is below said average flow rate, recirculating at least a portion of the waste water flowing through the evaporator back into the settlement tank which thereby functions as a heat reservoir.

4,243,523

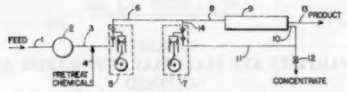
WATER PURIFICATION PROCESS AND SYSTEM

John P. Pelmulder, Saratoga, Calif., assignor to Allied Water Corporation, San Francisco, Calif.

Continuation-in-part of Ser. No. 842,613, Oct. 17, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,846

Int. Cl.[2] **B01D** *13/00, 31/00*

U.S. Cl. 210—652 **9 Claims**



1. A method for the desalination of sea water and the like to produce potable water, comprising, providing a membrane element with an inlet and an outlet and having a flow cross-section with a width to height ratio of greater than fifty, establishing a feed flow at a pressure in excess of the osmotic pressure to one side of the membrane element, which feed flow is at a rate less than sufficient to maintain the design minimum flow velocity in the flow cross-section of the membrane, recirculating a portion of the concentrate from the outlet to the inlet of the membrane element at a pressure in excess of the osmotic pressure and in excess of the feed flow pressure at a rate sufficient to cause the flow velocity at the surface of the membrane to exceed the design minimum flow velocity, said concentrate being recirculated at a rate which itself is less than the design minimum flow velocity in the flow cross-section of the membrane, recovering permeate product passing through said membrane while maintaining said feed flow at a rate which is sufficient to maintain salinity in said permeate product at or below a maximum acceptable level, and continuously discharging an amount of said concentrate at a rate substantially equal to the difference between the feed flow rate and the recovery permeate product flow rate, said concentrate discharge rate being less than the design minimum flow velocity in the flow cross-section of the membrane and being greater than

$$P\left(\frac{1}{R} - 1\right)$$

where P is the product flow rate and R is the theoretical recovery rate of product in a system not employing recirculation wherein the theoretical feed flow rate is equivalent to the sum of the actual feed flow rate and the actual recirculation rate.

4,243,524

AMINOALKYLENEPHOSPHONIC ACIDS AND SALTS THEREOF AND THEIR USE IN AQUEOUS SYSTEMS

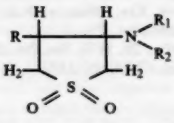
Joseph G. E. Fenyes, Germantown, and John D. Pera, Memphis, both of Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Division of Ser. No. 914,250, Jun. 9, 1978, Pat. No. 4,181,806. This application Aug. 2, 1979, Ser. No. 63,275

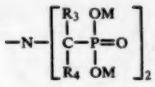
Int. Cl.[3] **C02B** *5/06*

U.S. Cl. 210—700 **17 Claims**

1. A process for inhibiting the deposition of scale and sludge on heat transfer surfaces of cooling water systems and boilers which comprises adding to said systems an aminoalkylenephosphonic acid or an alkali metal salt in an amount sufficient to inhibit the deposition of scale and sludge on said surfaces thereof having the formula:

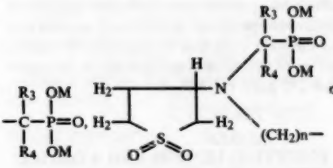


wherein R is hydrogen or

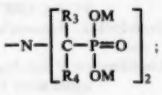


R_1 is hydrogen or

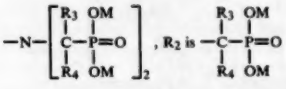
R_2 is an alkyl group containing 1 to 4 carbon atoms, 2-hydroxyethyl, 2-hydroxypropyl, 3-chloro-2-hydroxypropyl,



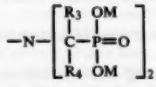
or



R_3 and R_4 may be the same or different and are selected from the group consisting of hydrogen and an alkyl group containing 1 to 4 carbon atoms; n is 1 or 2; M is hydrogen or an alkali metal; with the proviso that when R is



and with the further proviso that R_1 is hydrogen only when R_2 is



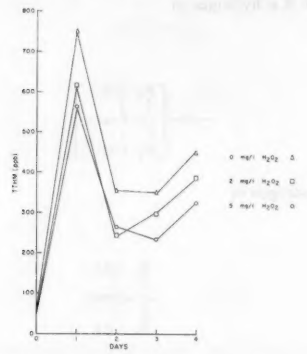
4,243,525

METHOD FOR REDUCING THE FORMATION OF TRIHALOMETHANES IN DRINKING WATER

Edward S. Greenberg, East Windsor, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Mar. 29, 1979, Ser. No. 25,179
Int. Cl.³ C02F *1/72, 1/76*
U.S. Cl. 210—754 **5 Claims**

FIG-1 FLORIDA GROUND WATER-TOTAL TRIHALO METHANES



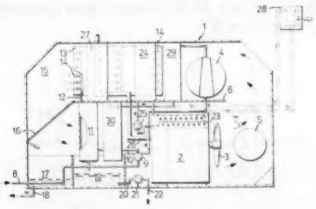
1. A method of treating water to disinfect the water and reduce the formation of trihalomethanes which comprises first adding to the water from about 0.1 to about 50 parts per million hydrogen peroxide to oxidize organic substances present therein and thereafter adding to the water sufficient chlorine to react with any hydrogen peroxide present and maintain a residual amount of chlorine sufficient to disinfect the water, whereby the formation of trihalomethanes present in the water amounts to less than 295 parts per billion.

4,243,526

PROCESS FOR PURIFYING LIQUIDS AND A DEVICE FOR CARRYING OUT THE PROCESS

Sven-Erik L. Ransmark, 7 Askholmsgatan, 213 63 Malmö, Sweden

Continuation of Ser. No. 882,535, Mar. 1, 1978, abandoned. This application Feb. 15, 1979, Ser. No. 12,405
Int. Cl.³ C02F *1/12*
U.S. Cl. 203—10 **2 Claims**



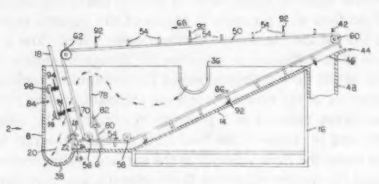
1. A process for purifying a liquid, preferably water, comprising the steps of:
(a) providing a sealed chamber,
(b) providing a source of heat and motive power within said chamber,
(c) forcing air under control of said source over said source to heat said air,
(d) providing a cooling chamber and cooling said cooling chamber under control of said source,
(e) guiding said liquid through said cooling chamber to cool same,
(f) spraying said cooled liquid in a spraying area in said sealed chamber,
(g) passing said heated air through said spraying area to collect liquid, and
(h) passing said thusly damped air through said cooling chamber to condense out said collected and purified liquid.

4,243,527

PARTICULATE MATERIAL SEPARATOR AND METHOD

Martin Leonard, 108 Glen Oak Dr., Layfayette, La. 70503

Filed Mar. 29, 1979, Ser. No. 25,038
Int. Cl.³ B01D *21/04, 23/00, 33/00*
U.S. Cl. 210—785 **15 Claims**

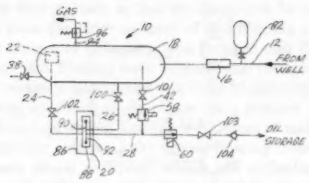


1. A device suitable for filtering earth drilling fluids containing particulate material, comprising:
(a) container means for containing said fluid, said container means having a base and at least one inclined wall mounted with said base, and extending upwardly at an incline away from said base;
(b) screening means operatively connected to said container means for separating said particulate material from said fluid to produce a screened fluid, said screening means being inclined away from said inclined wall and remote from said inclined wall;
(c) fluid inlet means operatively connected to said container means for admitting said fluid into said container means at a location laterally remote from said screening means;
(d) baffle means mounted between said fluid inlet means and said screening means and within said container means substantially over said base for preventing at least a substantial proportion of said particulate material from coming into contact with said screening means, said baffle means directing the flow of said fluid over the top of said baffle means, and in a generally downward direction in the region of said screening means to urge particulate material in the region of said screening means towards said base, while substantially reducing the flow of said particulate material beneath said baffle means toward said screening means;
(e) fluid outlet means operatively connected to said container means for carrying said screened fluid away from said container means;
(f) separate particulate material outlet means operatively connected to said container means for directing separated particulate material out of said container means;
(g) movable screen engaging means operatively connected to said container means for engaging said screening means and removing particulate material lodged in said screening means, said screen engaging means cooperating with said base and said inclined wall to carry separated particulate material to said separated particulate material outlet means and out of said container means; and
(h) biasing means connected to said screening means for movably urging said screening means in a generally upward direction to move against said screen engaging means.

4,243,528
TREATER FOR MECHANICALLY BREAKING OIL AND WATER EMULSIONS OF A PRODUCTION FLUID FROM A PETROLEUM WELL

Martin G. Hubbard, Corona Del Mar, and William E. Jackson, Newport Beach, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.

Filed Jun. 25, 1979, Ser. No. 51,545
Int. Cl.[2] B01D *17/04*
U.S. Cl. 210—104 **17 Claims**



10. An improvement in the apparatus for breaking the emulsion of oil and water in a production fluid stream from an oil well, the production fluid stream having a water phase, a phase of an oil-water emulsion, and an oil with oil and water emulsion phase, the improvement comprising:

(a) a settling vessel;

(b) means to introduce production fluid into the settling vessel;

(c) means to introduce a chemical emulsion breaker into the production fluid;

(d) the settling vessel being of sufficient capacity to stratify the phases of the production fluid in accordance with their density from the bottom towards the top of the vessel in the order of water, oil-water emulsion, and oil with oil and water emulsion;

(e) a weir box within the settling vessel and having a weir edge disposed to permit oil-with-emulsion to flow into the box over the edge;

(f) a centrifugal separator in fluid series circuit with the interior of the weir box, the centrifugal separator including means to centrifugally separate the oil with water emulsion into separate oil and water streams;

(g) means for introducing the water stream from the centrifugal separator into the settling vessel;

(h) control means responding to the level of oil-with-emulsion in the weir box such that upon a predetermined small quantity of oil-with-emulsion in the weir box the control means diverts oil from the oil stream exiting the centrifugal separator back into the settling vessel; and

(i) water level control means to remove water from the settling vessel upon the water reaching a predetermined excessive level.

4,243,529
OIL COLLECTING APPARATUS

William A. Strauss, Mason, N.H., assignor to Oil Recovery Systems, Inc., Greenville, N.H.

Continuation-in-part of Ser. No. 659,421, Feb. 9, 1976, abandoned. This application Jan. 15, 1979, Ser. No. 3,597
Int. Cl.[3] E02B *15/04*
U.S. Cl. 210—109 **4 Claims**

1. In an oil collection system including a buoyant collection unit comprising

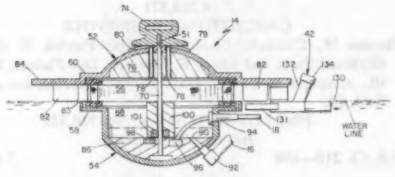
a housing defining an interior cavity and having an annular opening in the side thereof to permit flow of oil into said cavity, and

a hydrophobic cleophilic filter mounted at said opening to permit oil but not water to flow therethrough into said cavity,

said filter comprising a pair of spaced seal rings and a generally annular screen coated with a hydrophobic cleophilic material supported between said seal rings, said housing comprising a top cover and a base held respectively against said spaced seal rings,

and an annular array of floats carried by said housing, that improvement wherein

a draw bolt extending centrally between said cover and base draws said cover and base together about said sealing rings and screen to form said housing,



said central bolt also serves as a guide shaft for a control float of a pump of said system,

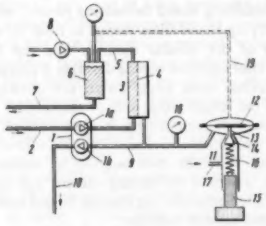
said control float carrying a switch-actuating magnet,

and said control float slideably engaged upon said bolt to move therealong between lower, pump de-actuating and upper, pump actuating positions in response to the level of oil collected in the volume of said buoyant housing.

4,243,530
HAEMOFILTRATION WITH FILTRATE FLOW CONTROL BY ADJUSTABLE VENTING

Kurt Lehnhoff, Oberursel, and Wilfried Schael, Bad Homburg, both of Fed. Rep. of Germany, assignors to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG, Bad Homburg, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,495
Claims priority, application Fed. Rep. of Germany, Dec. 9, 1977, 2754810
Int. Cl.[3] B01D *31/00*
U.S. Cl. 210—137 **9 Claims**



1. A hemofiltration apparatus comprising filter housing means including blood chamber means and filtrate chamber means, filter means separating said blood chamber means from said filtrate chamber means, inlet and outlet means operatively connected to said blood chamber means, first blood hose pump means (**1***a*) including a pump head operatively connected to said blood chamber means for establishing a blood circulatory flow through said blood chamber means, second filtrate hose pump means (**1***b*) operatively arranged to be driven by said pump head together with said first blood hose pump means, said second filtrate hose pump means (**1***b*) having a suction side directly operatively connected to said filtrate chamber means, bias adjustable valve means (**11**) operatively connected to said suction side of said second filtrate hose pump means (**1***b*), and to an air supply, for controllably connecting said suction side of said second filtrate hose pump means with said air supply, whereby said second filtrate hose pump means may entrain

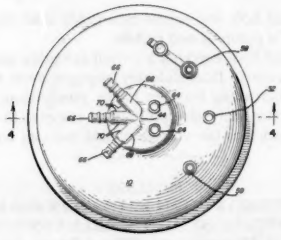
through said bias adjustable valve means a quantity of air which is determined by the bias adjustment of said bias adjustable valve means to reduce the filtrate conveying capacity of said second filtrate hose pump means thereby simultaneously determining the reduced pressure in said filtrate chamber means so that the adjustment of said bias adjustable valve means determines the volume of conveyed filtrate and hence the pressure differential across said filter means.

4,243,531

CARDIOTOMY RESERVOIR

Thomas W. Crockett, Burlington, Wis.; Patrick N. Huehls, Highland Park, and Barry G. Slotnick, Des Plaines, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed May 30, 1978, Ser. No. 910,323
Int. Cl.³ B01D *19/02*
U.S. Cl. 210—188 **7 Claims**



1. A blood reservoir which comprises: a rigid casing, a perforated tubular member positioned within said casing and extending between the ends thereof; inlet aperture means positioned at the upper end of said reservoir in communication with the bore of said tubular member to provide fluid communication from the exterior to said bore; flow aperture means positioned at the lower end of said tubular member to provide fluid communication between said bore and the casing interior, said bore containing blood defoaming means, and said tubular member carrying blood filter means to filter flow through the perforations of the tubular member and the flow aperture means, said inlet aperture means defining a plurality of tubular apertures having open ends which are outwardly directed normally of the longitudinal axis of the tubular member, said apertures inwardly terminating in open-bottom, downwardly curved end wall means to direct fluid flow inwardly through said apertures and then downwardly by means of a gentle, curved flow into said defoaming means, and outlet aperture means positioned adjacent the bottom of said casing in exterior relation to said tubular member.

4,243,532

BLOOD TREATING SYSTEM

Nobuaki Tsuda; Naoya Kominami; Kenji Inagaki, and Tamotsu Imamiya, all of Fujishi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 726,193, Sep. 24, 1976, abandoned. This application Dec. 13, 1978, Ser. No. 968,914
Claims priority, application Japan, Sep. 26, 1975, 50-115662; Mar. 29, 1976, 51-33562
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—196 **7 Claims**

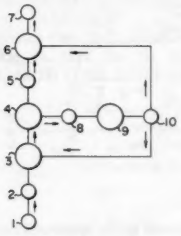
1. A blood treating system having a path for causing blood to flow formed in series comprising a blood introducing part; an element for mixing blood with blood plasma;

a blood plasma-separating element having a porous membrane which passes blood plasma in blood but does not pass any blood corpuscle therein;

an element for mixing the resulting concentrated blood with blood plasma; and a purified blood-withdrawing portion in the system;

and also a path for causing blood plasma to flow comprising means for transporting blood plasma separated in said blood plasma-separating element comprising a pump;

means for purifying blood plasma separated in said blood plasma-separating element and having at its inlet and exit, a filter having a purifying agent for removing unnecessary substances in blood plasma, filled therein and capable of preventing the purifying agent from flowing out; and



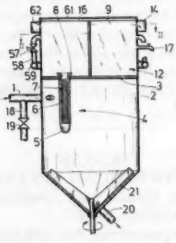
a three-way cock, said path for blood plasma to flow being formed between said blood plasma-separating element, said element for mixing blood with blood plasma, and said element for mixing the resulting concentrated blood with blood plasma and is so constructed that blood plasma separated in said blood plasma-separating element and purified in said means for purifying blood plasma can be sent optionally to either of said element for mixing blood with blood plasma or said element for mixing the resulting concentrated blood with blood plasma.

4,243,533

FILTERS WITH FILTRATE CHAMBER OVERFLOW PARTITIONS HAVING PLURAL OUTLETS

Jaakko Savolainen; Holger Engdahl; Yrjö Luukkainen, Martti Tolvanen; Jorma Surakka, all of Savonlinna, Finland, assignors to Enos-Gutzeit Osakeyhito; Helsinki, Finland

Filed Mar. 12, 1979, Ser. No. 19,622
Claims priority, application Finland, Mar. 13, 1978, 780792
Int. Cl.³ B01D *29/38*
U.S. Cl. 210—247 **3 Claims**



1. Improvement in a periodically operating pressure filter for the concentrating of a solid matter suspension and separating a filtrate, comprising a filtering tank comprising a bottom, first side walls extending upwardly from said bottom and a ceiling extending across the upper ends of said first side walls with an input conduit means connected to said first side walls for introducing the suspension to be filtered under pressure, a first drain conduit in said bottom for removal of the concentrated sludge from said tank, and a number of cylindrical filtering elements dependently supported from said ceiling and extending downwardly into said tank so that the filtrate flows under pressure from said tank through said filtering elements, a filtrate collect-

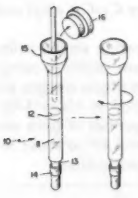
ing tank located above said filtering tank with said ceiling of said filtering tank forming the bottom of said collecting tank, said collecting tank including second side walls extending upwardly from said ceiling so that the filtrate flows from said filtering element into said collecting tank said filtering elements arranged to collect sludge on the outer surfaces to be periodically detached by making the pressure inside said filtering elements higher than within said filtering tank, wherein the improvement comprises that said collecting tank is arrange to maintain the filtrate under atmospheric pressure, said input conduit means being arranged for releasing the pressure acting in the said filtering tank so that the sludge can be periodically detached from the outer surfaces of said filtering elements by backflow from said collecting tank through said filtering elements into said filtering tank wherein the pressure has been released, means in said second side walls of said collecting tank for forming an overflow therefrom at a location spaced upwardly from said ceiling forming the bottom of said collecting tank, means for collecting the filtrate flowing from said overflow means, plural partitions within said collecting tank for dividing said collecting tank into a plurality of sections with said overflow means being located in each of said sections, said overflow means comprising an overflow opening from each of said sections located in said second side walls, a separate normally closed second drain conduit connected to said second side walls in each of said sections with said second drain conduit opening through said second side walls below said overflow opening and above the bottom of said collecting tank, so that by opening said second drain conduit associated with a particular one of said sections the filtrate therein can be drained to a level below said overflow opening.

4,243,534

BLOOD SEPARATION

George F. Bulbenko, Langhorne, Pa., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Jan. 25, 1979, Ser. No. 6,450
Int. Cl.[3] B01D *15/08*
U.S. Cl. 210—656 21 Claims



1. A chromatographic device for separating blood components, comprising:

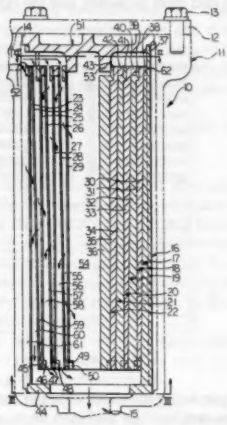
a chromatographic column, said column including an adsorbing agent for adsorbing blood components which is preconditioned in a buffer to the operating pH for chromatographic separation, a liquid comprising a blood lysing agent which lies above said adsorbing agent in an amount sufficient to hemolyze a whole blood sample which is to be subsequently introduced into the column; and closure means for the column to maintain the liquid and adsorbing agent in the column prior to use thereof, whereby upon use of the column a whole blood sample introduced into the column is hemolyzed in the column by the lysing agent prior to flowing through the adsorbing agent.

4,243,535

FILTER ASSEMBLY WITH TELESCOPIC ELEMENTS

Bertwin E. Behrends, East Peoria, and David A. Diebel, Metamora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 27, 1976, Ser. No. 754,811
Int. Cl.[3] B01D *29/26*
U.S. Cl. 210—315 12 Claims



1. A filter assembly comprising a plurality of telescopically disposed separate filter elements, each of said filter elements comprising a separate tubular screen having a plurality of longitudinally extending and uninterrupted ribs secured in a circumferentially spaced relationship therearound and wherein a first filter element of each adjacent pair of filter elements is telescopically disposed within a second filter element of said pair of filter elements with each rib of said first filter element being disposed in aligned relationship with a respective rib of said second filter element throughout the lengths thereof to space the screens of said pair of filter elements radially from each other to define a flow passage between circumferentially adjacent pairs of said ribs whereby a series of circumferentially disposed and isolated flow passages are defined throughout the length of said filter assembly. said pair of filter elements defining a first flow passage of said flow passages therebetween communicating directly with an inlet of said filter assembly disposed at a first end of said filter assembly and wherein another filter element spaced radially inwardly from said first filter element and said first filter element define a second flow passage of said flow passages therebetween communicating directly with an outlet of said filter assembly whereby fluid flow ingressing into the first flow passage of said filter assembly from said inlet will be forced through one of the filter elements of said pair of filter elements prior to its egress into said second flow passage and to said outlet.

4,243,536

CROSS-FLOW FILTRATION APPARATUS

Ludwig Prölss, Bellach, Switzerland, assignor to Kilcher-Chemie AG, Recherswil, Switzerland

Filed Nov. 27, 1978, Ser. No. 963,994
Claims priority, application Switzerland, Dec. 1, 1977, 14689/77
Int. Cl.[3] B01D *29/34, 31/00*
U.S. Cl. 210—321.1 8 Claims

1. Apparatus for cross-flow filtration of a fluid, comprising:

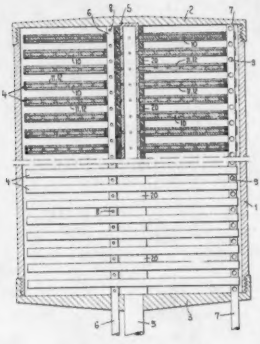
a tubular housing;

a filtrate collecting pipe centrally disposed within said housing;

a plurality of disc-shaped filter elements stacked one upon

the other within said housing so as to provide spaces between adjacent pairs of filter elements, said elements being spaced from said housing and supported by said filtrate collecting pipe for supplying the filtrate of said elements therethrough; and

at least one inlet pipe and at least one outlet pipe extending generally parallel to said filtrate collecting pipe within said housing, one of said inlet and outlet pipes being disposed adjacent said filtrate collecting pipe and extending through said filter elements, and the other of said inlet and



outlet pipes being disposed adjacent the periphery of said filter elements, each of said inlet and outlet pipes defining a plurality of axially spaced aperture means, one located in the space between each adjacent pair of filter elements for parallel feed of fluid across said filter elements;

said aperture means of said inlet pipe being oriented with respect to said filter elements for feeding fluid tangentially onto said filter elements to establish a helical fluid flow simultaneously across the surface of each of said filter elements.

4,243,537

SYNTHETIC METAL WORKING LUBRICANT

James E. Knepp; William G. Johnston, both of Pittsburgh, Pa., and Myron J. Jursich, Chicago, Ill., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 8, 1978, Ser. No. 932,006
Int. Cl.³ C10M *1/06, 1/32*
U.S. Cl. 252—49.3 **3 Claims**

1. A synthetic lubricant for metal working dispersible or miscible in water comprising:

(a) 5 to 15 parts by weight triethanolamine;

(b) 5 to 15 parts by weight 16 to 18 carbon atom aliphatic acid;

(c) 10 to 55 parts by weight polyoxyalkylene alcohol and dihydric alcohols;

(d) an aliphatic carboxylic acid ester in amount not more than 20 parts by weight; and

(e) 10 to 35 parts by weight water.

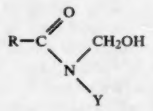
4,243,538

FUEL AND LUBRICATING COMPOSITIONS CONTAINING N-HYDROXYMETHYL ALIPHATIC HYDROCARBYLAMIDE FRICTION REDUCERS

Ronald L. Shubkin, West Bloomfield, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Jun. 7, 1979, Ser. No. 46,257
Int. Cl.³ C10M *1/32*
U.S. Cl. 252—51.5 A **6 Claims**

1. A lubricating oil composition formulated for use in the crankcase of an internal combustion engine, said composition comprising a major amount of a hydrocarbon lubricating oil and a minor friction-reducing amount of an oil-soluble aliphatic N-hydroxymethyl hydrocarbylamide having the structure



wherein R is an aliphatic hydrocarbon group containing 11–35 carbon atoms and Y is selected from the group consisting of hydrogen, lower alkyls containing 1–4 carbon atoms and hydroxymethyl.

6. A liquid hydrocarbon fuel suitable for use in an internal combustion engine comprising a major amount of liquid hydrocarbon fuel and a minor friction-reducing amount of an oil-soluble aliphatic N-hydroxymethyl C_{12-36} hydrocarbylamide.

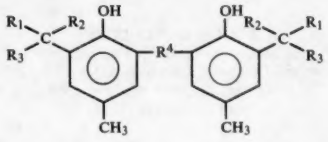
4,243,539

ANTIOXIDANT STABILIZED LUBRICANT COMPOSITIONS

Malvina Farcasiu, Princeton, and Susan D. Brandes, Trenton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 6, 1979, Ser. No. 64,143
Int. Cl.³ C10M *1/20*
U.S. Cl. 252—52 R **11 Claims**

1. A lubricant composition comprising a major amount of a lubricating oil or grease prepared therefrom and a minor amount sufficient to impart antioxidant or stabilization properties thereto of the reaction product of singlet oxygen and a hindered bis phenol having the general formula:



where R^1, R^2 and R^3 are C_1–C_{20} alkyl and R^4 is C_1–C_{12}alkylene.

8. A process for preparing singlet oxidation products suitable for use as antioxidant additives comprising reacting in a suitable reaction medium singlet oxygen with a hindered bis-p-methylphenol as described in claim 1 by exposing same to strong visible light for periods of from about 1 to 3 hours, at temperatures of from about 10° to about 30° C and, optionally, in the presence of a photosensitizer.

4,243,540

ORGANIC ESTERS FOR LUBRICATING COMPOSITIONS

Giuseppe Mancini, Melegnano, and Luigi Imparato, Milano, both of Italy, assignors to Snamprogetti S.p.A., Milanese, Italy

Continuation of Ser. No. 971,823, Dec. 21, 1978, abandoned, which is a continuation of Ser. No. 908,356, May 22, 1978, abandoned, which is a continuation of Ser. No. 756,403, Jan. 3, 1977, abandoned, which is a continuation of Ser. No. 486,868, Jul. 9, 1974, abandoned. This application Oct. 30, 1979, Ser. No. 89,468
Claims priority, application Italy, Jul. 9, 1973, 26335 A/73
Int. Cl.³ C09F *5/08;* C11C *3/00*
U.S. Cl. 252—56 S **9 Claims**

1. A mixture of esters for a lubricating composition that is prepared by a process which consists of the esterification of:

A. a mixture of bifunctional and trifunctional neopentyl-

polyols wherein the molar ratio of the bifunctional neopentylpolyols to the trifunctional neopentylpolyols is in the range of 1:2.5 to 1:10; and

B. a mixture of linear monocarboxylic acids containing from 6 to 8 carbon atoms, wherein the molar average is C_7, and of linear monocarboxylic acids containing from 12 to 18 carbon atoms, the molar ratio of the C_6 to C_8 acids and the C_{12} to C_{18} acids being in the range from 4:1 to 19:1.

5. A lubricating composition containing at least one of the esters defined in claim 1.

4,243,541

PIEZOELECTRIC CERAMICS

Hiroshi Takeuchi, Matsudo; Yukio Ito, Kokubunji; Shigeru Jyomura, Hachioji; Kunio Yamashita, Hachioji; Kazuyuki Nagatsuma, Hachioji; Sakichi Ashida, Fuchu, and Mitsuru Ishii, Higashi-yamato, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Sep. 6, 1978, Ser. No. 940,219

Claims priority, application Japan, Sep. 7, 1977, 52-106606; Sep. 7, 1977, 52-106607

Int. Cl.³ C04B *35/46*

U.S. Cl. 252—62.9 **1 Claim**

1. Piezoelectric ceramics comprising 42.7 to 49.5 mol-% of PbO, 45.2 to 53.1 mol-% of TiO_2, 0.5 to 3.7 mol-% of Nd_2O_3, 0.3 to 3.3 mol-% of In_2O_3, and 0.2 to 1.5 mol-% of MnO_2, the total mol-% of PbO, TiO_2, Nd_2O_3, In_2O_3 and MnO_2, being 100 mol-%.

4,243,542

ELECTRICAL INSULATING COMPOSITIONS CONTAINING ZINC OXIDE AND AN ORGANOSILICON COMPOUND CONTAINING AT LEAST ONE SILICON-HYDROGEN BOND

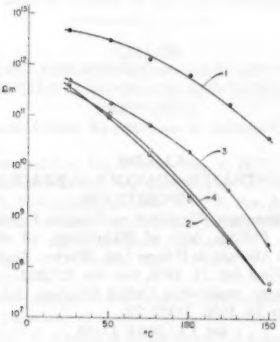
Katsutoshi Mine, Ichihara, Japan, assignor to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Sep. 13, 1979, Ser. No. 74,852

Claims priority, application Japan, Oct. 3, 1978, 53-121721

Int. Cl.³ H01B *3/46, 3/10*

U.S. Cl. 260—375 B **14 Claims**



1. An electrical insulating material comprising

(A) 100 parts by weight of an organic electrical insulating material;

(B) 5–300 parts by weight, based on 100 parts by weight of (A), of zinc oxide powder and,

(C) 1–30 weight percent based on the weight of components (B) and (C) of an organosilicon compound in which there is at least one silicon atom having a hydrogen atom bonded thereto.

4,243,543

STABILIZED LIQUID ENZYME-CONTAINING DETERGENT COMPOSITIONS

C. Carol Guilbert, St. Paul, and William H. Scepanski, Burnsville, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed May 11, 1979, Ser. No. 38,020

Int. Cl.³ C11D *7/54, 7/42*

U.S. Cl. 252—105 **14 Claims**

1. A two-part, cleaning system consisting essentially of a first, proteolytic enzyme-containing part and a second, relatively more alkaline part associated therewith, each part being separately packaged to assure maximum potency of the proteolytic enzyme until the two parts are blended together, comprising:

(I) in a first, proteolytic enzyme-containing part, the composition comprising:

(a) 20–90% by weight of water;

(b) a proteolytically effective amount of a proteolytic enzyme uniformly distributed throughout said water; said proteolytically effective amount ranging from about 0.001 to about 1% by weight on a pure enzyme basis;

(c) 1–70% by weight of a detergent selected from the group consisting of anionic surfactants, nonionic surfactants, and mixtures thereof; said detergent being uniformly distributed throughout said water;

(d) 0.5–30% by weight of a water-dispersible stabilizing system for said enzyme, dissolved in said water, said system comprising the combination of:

(1) a proteolytic enzyme-stabilizing amount ranging from about 0.1 to about 5% by weight of a water-dispersible antioxidant having a single electrode potential, at 25° C., for the oxidation of said antioxidant to an oxidized species, which is at least equal to that of ascorbic acid but less than that of sodium hydrosulfite;

(2) about 1 to about 25% by weight of an organic, hydrophilic, water-soluble polyol containing from 2 to 6 hydroxyl groups and having a molecular weight less than about 500;

(3) a buffering amount of a weak base for maintaining the pH of said composition within the range of 5.2 to 9.0 and for preventing spontaneous downward pH shifts of said first part, which shifts would result from the spontaneous oxidation of said anion;

(II) in a second, relatively more alkaline part, formulated for blending with said first, proteolytic enzyme-containing part to increase the cleaning effectiveness of said first part, a composition comprising a chelating or sequestering agent for sequestering alkaline earth metal cations.

4,243,544

PRODUCTION OF ALUMINO-SILICATE-CONTAINING DETERGENT COMPOSITION

Thomas Taylor, Northwich, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Jan. 29, 1979, Ser. No. 7,062

Claims priority, application United Kingdom, Feb. 1, 1978, 4052/78

Int. Cl.³ C11D *7/02, 7/14, 11/02*

U.S. Cl. 252—135 **13 Claims**

1. In a process for preparing a powdered detergent composition having an effective amount of a sodium alumino-silicate detergency builder, said process comprising the steps of forming a detergent slurry containing the sodium alumino-silicate detergency builder in a slurry mixing vessel and spray drying the slurry through a spray nozzle, the improvement wherein an aqueous solution or suspension of sodium silicate in an amount sufficient to provide from 0.1 to 50% by weight in the detergent composition is admixed with the detergent slurry at a point between the slurry mixing vessel and the spray nozzle and the contact time between the detergent slurry and the solution or suspension of sodium silicate is less than 5 minutes.

4,243,545

DETERGENT COMPOSITIONS WITH SILANE-ZEOLITE SILICATE BUILDER

Thomas C. Campbell, Paoli, Pa.; Elliot P. Hertzenberg, Wilmington, Del., and Howard S. Sherry, Cherry Hill, N.J., assignors to PQ Corporation, Valley Forge, Pa.

Division of Ser. No. 967,537, Dec. 7, 1978, Pat. No. 4,138,363, which is a continuation-in-part of Ser. No. 842,425, Oct. 14, 1977, abandoned. This application Dec. 10, 1979, Ser. No. 102,288

Int. Cl.[3] C02F *1/42;* C11D *3/08, 3/12, 11/02*

U.S. Cl. 252—140 6 Claims

1. A builder system for detergents, consisting of:

(a) 5 to 60 parts by weight of a hydrophilic silane-zeolite composite, wherein the composite consists of 0.05 to 3.35% by weight of hydrophilic silane, and the remainder to 100% crystalline sodium aluminosilicate containing 15 to 35% water; and

(b) 8 to 25 parts by weight of water soluble alkali metal silicate solids with a molar composition equivalent to 1.0 4.0 moles of SiO_2 per mole of Na_2O.

4,243,546

STABLE AQUEOUS COMPOSITIONS CONTAINING ENZYMES

Elias H. Shaer, Cincinnati, Ohio, assignor to The Drackett Company, Cincinnati, Ohio

Filed Mar. 23, 1979, Ser. No. 23,363

Int. Cl.[3] C11D *7/42, 3/386*

U.S. Cl. 252—174.12 19 Claims

1. A stabilizing aqueous enzyme composition consisting essentially of:

(1) from about 1% to about 90% by weight of water;

(2) from about 0.01% to about 6% by weight of an acid selected from the group consisting of saturated or unsaturated organic monoacids and diacids having from 1 to 18 carbon atoms;

(3) from 0.1% to about 25% by weight of an alkanolamine selected from the group consisting of monoethanolamine, diethanolamine and triethanolamine;

(4) from about 0.006% to about 5.0% by weight of an enzyme selected from the group consisting of proteases and alpha amylases; and

(5) from about 1% to about 55% by weight of a surfactant selected from the group consisting of nonionic surfactants, anionic surfactants, and mixtures of nonionic and anionic surfactants.

4,243,547

COMPOSITION AND METHOD FOR REMOVING WATER AND AQUEOUS LEAK TRACER SOLUTIONS FROM FUEL TANKS

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 15, 1979, Ser. No. 66,608

Int. Cl.[3] C09K *3/32;* B85B *1/04;* G01M *3/04*

U.S. Cl. 252—194 14 Claims

1. A composition for removing residual water or aqueous leak tracer solution from a fuel tank of a vehicle and/or fuel lines and components associated with said tank, which consists essentially of about 25 to about 90% by weight of a nonionic surfactant, said nonionic surfactant being an oxyalkylated aliphatic alcohol or mixtures thereof, formed of an aliphatic primary or secondary alcohol carrying ethoxy or propoxy groups, or mixtures thereof, and about 75 to about 10% of a petroleum-based hydrocarbon fuel, by volume.

4,243,548

PRESSURIZED AEROSOL FORMULATION AND PROCESS FOR THE MANUFACTURE THEREOF

Dieter Heeb; Uwe Bergemann, and Claus-Dieter Frenzel, all of Hamburg, Fed. Rep. of Germany, assignors to Hans Schwarzkopf GmbH, Hamburg, Fed. Rep. of Germany

Filed Nov. 27, 1978, Ser. No. 964,010

Claims priority, application Switzerland, Nov. 25, 1977, 14492/77

Int. Cl.[3] C09K *3/30;* B65B *7/00, 31/10*

U.S. Cl. 252—305 18 Claims

1. A pressurized aerosol formulation, which is in the form of a mixture, to be sprayed as a cosmetic, room or medicinal spray, of a propellant gas and organic solvents for the propellant gas, as the propellant, and also active compounds and solvents for the active compounds, wherein the mixture is in the form of a homogeneous solution and the solution contains at least 50 percent by weight of non-combustible constituents relative to the total weight of the mixture and contains, as propellant gases, carbon dioxide and dimethyl ether, and, as non-combustible constituents, at least water, carbon dioxide, methylene chloride, 1,1,1-trichloroethane, or a mixture of methylene chloride and 1,1,1-trichloroethane, wherein said organic solvents are selected from the group consisting of acetone, ethyl methyl ketone, diethyl ether, dimethoxymethane, diethyl carbonate, ethyl alcohol, n-propanol, isopropanol, methyl acetate, ethyl acetate, methoxyacetone, hydroxyacetone, methyl isopropyl ketone, diethyl ketone, diisopropyl ketone, dipropyl ketone, dichloroethylene, ethyl chloride, 1,1-dichloroethane, 1-chlorobutane, and mixtures thereof.

12. A process for the manufacture of the pressurized aerosol formulation according to claim 1, characterized in that organic solvents for the propellant gases, in order to form the propellant and also as solvents for the active compounds, and, as non-combustible constituents, at least water, methylene chloride and/or trichloroethane are filled into a pressurized container and, after a spray valve has been fitted, dimethyl ether and then carbon dioxide are passed in, the nature and amount of the constituents being qualitatively and quantitatively so matched, taking into account the intended use, that the pressurized packing contains at least 55 percent by weight of non-combustible constituents and the liquid phase is in the form of a homogeneous solution under a pressure of about 5 to 7 bars after filling.

4,243,549

CONCENTRATED AQUEOUS SURFACTANT COMPOSITIONS

Edward T. Messenger, Workington; Douglas E. Mather, and Brinley M. Phillips, both of Whitehaven, all of England, assignors to Albright & Wilson Ltd., Warley, England

Filed Jul. 25, 1978, Ser. No. 927,832

Claims priority, application United Kingdom, Jul. 26, 1977, 31350/77; May 26, 1978, 31350/78

Int. Cl.[3] B01F *17/16*

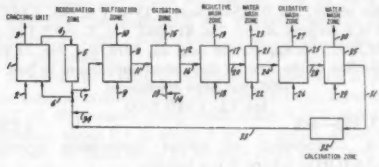
U.S. Cl. 252—355 21 Claims

1. A pourable aqueous surfactant composition consisting essentially of water and an active mixture dilutable to a fluid active concentration between 5 and 30% by weight, said mixture consisting essentially of at least 10% based on the weight of said active mixture of at least one amphoteric surfactant, and at least 10% by weight of said active mixture of at least one anionic surfactant, the total weight of surfactants forming said active mixture being sufficient so that said composition is, at least predominantly, in the G phase.

4,243,550
CATALYST DEMETALLIZATION WITH A REDUCTIVE SO_2 WASH

Emmett H. Burk, Glenwood; Jin S. Yoo, South Holland; John A. Karch, Chicago, and Jui-Yuan Sun, South Holland, all of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Jun. 14, 1976, Ser. No. 695,602
Int. Cl.[3] B01J *21/20, 29/38;* **C10G** *11/04, 11/00*
U.S. Cl. 252—412 **24 Claims**



1. In a process for treating a metal poisoned-containing catalyst which has been poisoned in a hydrocarbon conversion process, wherein a feedstock containing at least one of said metals is contacted with catalyst to convert hydrocarbon and deposit carbonaceous material is removed from said catalyst, the improvement which comprises:

(i) contacting said metal poison-containing catalyst with at least one sulfiding agent to convert at least a portion of said poison metal to metal-sulfur-containing compound and form a sulfided catalyst;

(ii) contacting said sulfided catalyst with an oxygen-containing medium at conditions to promote subsequent metals removal and form a promoted catalyst;

(iii) contacting said promoted catalyst with an aqueous, SO_2 reductive wash medium to remove at least a portion of the metal poison from said promoted catalyst, said contacting being effected in a contact time of about 0.5–15 minutes;

(iv) subjecting said reductively washed catalyst to an aqueous oxidative wash; and

(v) recovering a catalyst of reduced metal poison content and improved catalytic activity.

2. A process as in claim 1 wherein the reductive wash medium is a saturated SO_2 solution.

5. A process as in claim 1 wherein the oxidative wash medium is an aqueous solution of hydrogen peroxide.

4,243,551
CATALYST FOR OXIDIZING MERCAPTANS AND MERCAPTIDE COMPOUNDS AND METHOD FOR PREPARING

Clifford Ward, Louisa, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation of Ser. No. 830,514, Sep. 6, 1977, abandoned, which is a division of Ser. No. 753,400, Dec. 22, 1976, Pat. No. 4,090,954. This application Dec. 4, 1978, Ser. No. 966,163
The portion of the term of this patent subsequent to May 23, 1995, has been disclaimed.
Int. Cl.[3] B01J *31/22*
U.S. Cl. 252—428 **18 Claims**

1. A metal complex or substituted derivative thereof obtained from reacting at a temperature between about 190° C. and about 220° C. a mixture containing 3,3′,4,4′-benzophenonetetracarboxylic dianhydride, a metal salt of the desired metal, urea, boric acid and ammonium molybdate wherein said metal is selected from the group of iron, manganese, chromium, magnesium, copper, nickel, zinc, titanium, hafnium, thorium, tin, lead, columbium, tantalum, antimony, bismuth, molybdenum, palladium, platinum, silver, mercury, vanadium, and cobalt, the mole ratio of urea to 3,3′,4,4′-benzophenone-tetracarboxylic dianhydride being between about 20 and about 1, and correspondingly the mole ratio of metal salt being between about 1.0 and about 0.1, the mole ratio of boric acid being between about 1.0 and about 0.1 and the mole ratio of ammonium molybdate being between about 1.0 and about 0.002.

4. A catalyst for oxidizing alkali mercaptide compounds to disulfides in an aqueous alkaline solution obtained by reacting the complex or derivatives thereof of claim 1 with an acid or base to thereby provide a catalyst which is soluble in aqueous alkaline solution.

7. The catalyst of claim 4 being impregnated on a caustic inert carrier.

4,243,552
POLYMERIZATION CATALYST AND PROCESS

Melvin B. Welch, and Richard E. Dietz, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 11, 1978, Ser. No. 968,156
Int. Cl.[3] C08F *4/64*
U.S. Cl. 252—429 B **21 Claims**

1. A catalyst which forms on mixing:

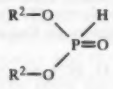
A. a catalyst component A formed by milling

(1) a magnesium halide or manganous halide with

(2) at least one catalyst adjuvant selected from

(a) hydrocarbyl metal oxides of the formula $M(OR)_n$ wherein M is aluminum, boron, magnesium, titanium or zirconium, n is an integer representing the valence of M and ranges from 2–4, and R is a hydrocarbyl group having from 1 to 24 carbon atoms per molecule,

(b) organo phosphites of the formula



wherein R^2 is an aryl, aralkyl, alkaryl or haloaryl having from 6 to 20 carbon atoms,

(c) aromatic phenols of the formula HOR^3 wherein R^3 is an aryl group containing from 6 to about 20 carbon atoms,

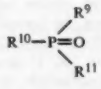
(d) aromatic ketones of the formula

wherein R^4 is a thiophene, aryl or alkyl group and R^5 is an aryl group containing from 6 to 20 carbon atoms,

(e) organo silanols of the formula

wherein R^6, R^7, R^8 are the same or different and are hydrocarbyl groups containing from 4–20 carbon atoms,

(f) organo phosphates and phosphines of the formula

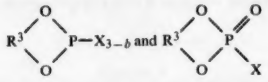


wherein each R is the same or different hydrocarbyl or hydrocarbyloxy group containing from 1 to 20 carbon atoms,

(g) oxygenated terpenes selected from among carvone, dihydrocarvone, carvenone and carvomenthane,

(h) triarylphosphites having from 6 to 24 carbon atoms in each aryl group, and

(i) halogen-containing organo phosphorus compounds of the formula $PX_{3-a}(OR^3)_a$,



where R^3 is an aryl group containing from 6 to 20 carbon atoms, X is a halogen, a is 1 or 2, and b is 0 or 2 to form a milled composite wherein the molar ratio of (1) to (2) ranges from 4:1 to 100:1;

(3) treating the composite thus obtained from (1) and (2) with a tetravalent titanium halide for a period of time sufficient to incorporate titanium tetrahalide on at least a portion of the surface of said milled composite; and

B. a cocatalyst component B comprising at least one organoaluminum compound wherein the molar ratio of component B to titanium compound ranges from 0.5:1 to 2,000:1 and the amount of titanium present in the finished catalyst ranges from about 0.1 to about 10 weight percent based on the dry composite.

4,243,553

PRODUCTION OF IMPROVED MOLYBDENUM DISULFIDE CATALYSTS

Alfred W. Naumann, Charleston, W. Va., and Albert S. Behan, Bronxville, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,238

Int. Cl.³ B01J *27/02, 27/24, 31/12;* **C01G** *37/00*

U.S. Cl. 252—439 **30 Claims**

1. A process for the production of improved, sulfur resistant catalysts comprising thermally decomposing a thiomolybdate salt having the formula B_2 $[MoO_xS_{4-x}]$, where B is a substituted aliphatic ammonium or a cyclic amine containing one or more basic N atoms, and x is 0, 1 or 2, at a decomposition temperature of from about 300° C. to about 800° C., said substituted ammonium thiomolybdate salt being heated to said decomposition temperature slowly, in an essentially oxygen-free atmosphere, through the temperature interval in which a substantial portion of said substituted ammonium thiomolybdate salt decomposes, said salt decomposing to form a molybdenum disulfide, MoS_2, product having desirable properties for use as a catalyst for water gas shift and methanation reactions and for catalyzed hydrogenation or hydrotreating reactions.

4,243,554

MOLYBDENUM DISULFIDE CATALYST AND THE PREPARATION THEREOF

Alfred W. Naumann, Charleston, W. Va., and Albert S. Behan, Bronxville, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 11, 1979, Ser. No. 47,239

Int. Cl.³ B01J *27/02, 27/24;* **C01G** *37/00*

U.S. Cl. 252—439 **24 Claims**

1. A process for the production of improved, sulfur resistant catalysts comprising thermally decomposing an ammonium salt of molybdenum-sulfur cluster anions or an ammonium thiomolybdate salt having the formula $(NH_4)_2$ $[MoO_xS_{4-x}]$, where x is from about 0.8 to about 2.2, at a decomposition temperature of from about 300° C. to about 800° C., said salt being heated to the decomposition temperature rapidly at a rate in excess of about 15° C./min. in an essentially oxygen-free atmosphere, said salt decomposing at said temperature to form a high surface area, bulk molybdenum disulfide, MoS_2, having desirable properties for use as a catalyst for water gas shift and methanation reactions and for catalyzed hydrogenation or hydrotreating reactions.

4,243,555

COMPOSITION FOR RECOVERY OF MG^{++} FROM BRINES

John M. Lee, and William C. Bauman, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 939,544, Sep. 5, 1978, Pat. No. 4,183,900, which is a division of Ser. No. 812,542, Jul. 5, 1977, Pat. No. 4,116,857. This application Aug. 31, 1979, Ser. No. 71,920

The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.

Int. Cl.³ C01B *9/00*

U.S. Cl. 252—441 **5 Claims**

1. A composition of matter comprising crystalline $MgX_2.2Al(OH)_3$, where X is a halide.

4,243,556

SULFUR OXIDES CONTROL IN CRACKING CATALYST

William A. Blanton, Jr., Woodacre, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 4, 1978, Ser. No. 966,190

Int. Cl.³ B01J *29/04*

U.S. Cl. 252—455 Z **4 Claims**

1. A composition of matter for use in a process for cracking hydrocarbons in the absence of externally supplied molecular hydrogen, comprising:

from 75 to 99 weight percent of an acidic particulate cracking catalyst including at least 20 weight percent of a silicon component, calculated as silica and excluding silicon in the form of zeolitic crystalline alumino-silicate; and

from 1 to 25 weight percent of a particulate solid including at least 75 weight percent alumina and from 100 parts per million, by weight, to 1.0 weight percent, relative to the amount of alumina in said particulate solid and calculated on an elemental basis, of a promoter comprising at least one element or compound of an element selected from sodium, manganese and phosphorus, said particulate solid containing less than 20 weight percent silicon, calculated as silica.

4,243,557

SULFUR TRANSFER CRACKING CATALYST

Elroy M. Gladrow; William L. Schuette, both of Baton Rouge, and Terry A. Reid, Slaughter, all of La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 26, 1978, Ser. No. 973,000

Int. Cl.³ B01J *29/08, 29/12*

U.S. Cl. 252—455 Z **15 Claims**

1. A catalyst composition for catalytically cracking a sulfur-containing hydrocarbon feed, and for the fixation of sulfur by the catalyst and transfer thereof from the catalytic regeneration zone to the catalytic cracking zone of a catalytic cracking unit, between which zones the catalyst composition is circulated, which comprises an admixture of composite particles, a major component particle in concentration of greater than 50 percent, based on the total weight of the catalyst, constituted of a Group VIII noble metal composited on an aluminosilicate zeolite-containing refractory inorganic oxide support in concentration ranging from about 1 part to about 50 parts, per million parts by weight of total catalyst, for providing principally cracking and combustion promoting functions, and a minor component particle present in the admixture in concentration of less than 50 percent, based on the total weight of the catalyst, constituted of a Group II-A metal composited with a refractory inorganic oxide support in concentration ranging from about 1 percent to about 50 percent, based on the weight of the minor component particles.

4,243,558
NONACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 945,035, Sep. 22, 1978, which is a division of Ser. No. 827,651, Aug. 25, 1977, Pat. No. 4,136,127, which is a continuation-in-part of Ser. No. 810,321, Jun. 27, 1977, Pat. No. 4,110,200, which is a continuation-in-part of Ser. No. 713,020, Aug. 9, 1976, Pat. No. 4,036,742, which is a continuation-in-part of Ser. No. 656,925, Feb. 10, 1976, Pat. No. 4,025,418, which is a continuation-in-part of Ser. No. 550,083, Feb. 14, 1975, Pat. No. 3,939,059. This application Jul. 27, 1979, Ser. No. 61,209
Int. Cl.[2] B01J *21/04, 23/58, 23/62, 23/64, 23/78, 23/82, 23/84*
U.S. Cl. 252—466 B 13 Claims

1. A nonacidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.01 to about 2 wt. % rhenium, about 0.1 to about 5 wt. % cobalt, about 0.1 to about 5 wt. % alkali metal or alkaline earth metal, and about 0.001 to about 1 wt. % germanium; wherein the platinum group metal, rhenium, catalytically available cobalt, germanium and alkali or alkaline earth components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group component is present in the elemental metallic state; wherein substantially all of the rhenium and catalytically available cobalt components are present in the elemental metallic state or in a state which is reducible to the elemental metallic state or in a mixture of these states; and wherein substantially all of the germanium and alkali or alkaline earth components are present in an oxidation state above that of the corresponding elemental metal.

4,243,559
LIQUID DETERGENT COMPOSITIONS CONTAINING ALKANOLAMINES AND POLYOXYALKYLENE ALKYL ETHERS

Tetsuya Imamura, and Takashi Hiraide, both of Tokyo, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed May 23, 1979, Ser. No. 41,800
Claims priority, application Japan, Jun. 5, 1978, 53-67530
Int. Cl.[3] C11D *3/43, 3/30, 3/20*
U.S. Cl. 252—548 3 Claims

1. A liquid detergent composition consisting essentially of: 0.5 to 30% by weight of one or a mixture of two or more alkanolamines having the formula

$$(C_nH_{2n}OH)_mNH_{3-m}$$

wherein n is an integer of from 1 to 3 and m is an integer of from 1 to 3; 0.5 to 30% by weight of one or a mixture of two or more polyoxyalkylene mono- or di-lower alkyl ethers having the formula

$$RO(C_2H_4O)_x(C_3H_6O)_yR'$$

wherein R and R′ are hydrogen, methyl or ethyl, with the proviso that both of R and R′ are not hydrogen simultaneously, the mean value of x plus y is from 3.0 to 10.0 and $0.0 \leqq x \leqq 0.25y$; 0.1 to 20% by weight of one or a mixture of water-soluble, synthetic, organic surfactants; and the balance is essentially water.

4,243,560
METHOD OF RECOVERING POLYOLS FROM SCRAP POLYURETHANE FOAM

Augusto Balestrini, Turin, Italy, assignor to Centro Ricerche Fiat S.p.A., Turin, Italy

Filed Apr. 4, 1979, Ser. No. 27,136
Claims priority, application Italy, Apr. 7, 1978, 67768 A/78
Int. Cl.[3] C07C *29/74;* C08J *11/04*
U.S. Cl. 260—2.3 6 Claims

1. A method of recovering polyols from scrap polyurethane foam by thermal treatment, comprising the steps of: pyrolizing a comminuted scrap foam of a flexible or semi-rigid polyurethane at a temperature of from about 450° C. to about 800° C. with a residence time at the temperature of from about 3 minutes to about 1 hour in the absence of air in the absence of any added reactive agents or catalysts; at the same time collecting and condensing the gaseous decomposition products evolving from the mass being pyrolized, thereby obtaining a liquid condensate comprising a heavy aqueous phase and a light organic phase; and recovering the organic phase.

5. A method according to claim 1, 2 or 3, wherein the method includes reacting the recovered organic phase without purification treatment with an organic diisocyanate to produce a polyurethane resin.

4,243,561
COMPOSITION AND METHOD OF IMPROVING THE GREEN STRENGTH OF UNVULCANIZED [ELASTOMER] RECLAIMED RUBBER ELASTOMER BLENDS

Joginder Lal, Akron, and Sandra J. Walters, Stow, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 779,382, Mar. 21, 1977, Pat. No. 4,198,324. This application May 24, 1979, Ser. No. 42,275
Int. Cl.[3] C08L *7/00, 9/00*
U.S. Cl. 260—4 R 4 Claims

1. A prevulcanization process for producing elastomer blends having improved green strength, comprising,

mixing a semi-crystalline butene polymer having a number average molecular weight of from about 30,000 to about 500,000 with an elastomer and reclaimed rubber to produce the blend, said butene polymer selected from the class consisting of polybutene and interpolymers made from 1-butene monomer and at least one monomer selected from the class consisting of alpha-olefins having 2 through 16 carbon atoms; non-conjugated dienes having the general formula:

$$CH_2=CH\left(CH\right)_n-C=C-R_4$$
$$\qquad\qquad\quad R_1 \qquad R_2 \; R_3$$

where R_1, R_2, and R_3 is a hydrogen, a lower alkyl group containing from one to four carbon atoms, or an aryl group; where R_4 is an aryl group or a lower alkyl group containing from one to nine carbon atoms, and n is an integer having a value of from 1 to 6, and wherein the said R_1's in the

$$\left(CH\right)_n$$
$$\quad R_1$$

group may be similar to dissimilar; and non-conjugated alpha, omega-polyenes having from 6 to 36 carbon atoms which may or may not contain internal unsaturation, wherein butene in said interpolymers comprises from 99.9 to 65 mole percent of the total monomers,

said elastomer selected from the group consisting of natural cis-1,4-polyisoprene and elastomers made from monomers selected from the group consisting of conjugated dienes having from 4 to 10 carbon atoms, interpolymers of said dienes among themselves or with monomers selected from the group consisting of vinyl substituted aromatic hydrocarbon compounds having from 8 to 12 carbon atoms, and polyalkenylenes, the amount of said butene polymer ranging from about 2 parts to about 25 parts per 100 parts of said elastomer and said reclaimed rubber, the amount of said elastomer based upon said elastomer and said reclaimed rubber being greater than 5 percent by weight.

4,243,562

PROCESS FOR THE POLYMERIZATION OF VINYL CHLORIDE IN AQUEOUS SUSPENSION UTILIZING AN OIL-SOLUBLE INITIATOR AND SUBSEQUENTLY A WATER-SOLUBLE INITIATOR AND USE OF THE POWDERS OBTAINED THEREBY

Andre Petit, Brussels, Belgium, assignor to Solvay & Cie., Brussels, Belgium

Filed Jun. 2, 1978, Ser. No. 911,811

Claims priority, application France, Jun. 7, 1977, 77 17798

Int. Cl.[2] C08F *2/20, 14/06*

U.S. Cl. 260—17 A **10 Claims**

1. Process for the production of polyvinyl chloride powder suitable for making battery separators by the polymerization of vinyl chloride in aqueous suspension in the presence of an oil-soluble free radical polymerization initiator and a dispersing agent system comprising a cellulose ether and an anionic emulsifying agent, and separation of the polyvinyl chloride powder in a conventional manner after termination of polymerization, consisting essentially of: carrying out the polymerization initially with an oil-soluble initiator, and adding a water-soluble free radical polymerization initiator during polymerization after conversion reaches at least 60%.

4,243,563

CALCIUM POLYSULFIDE SOIL STABILIZATION METHOD AND COMPOSITIONS

Richard L. Ferm, Lafayette, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 826,220, Aug. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 730,486, Oct. 7, 1976, abandoned. This application Mar. 16, 1979, Ser. No. 21,134

Int. Cl.[3] C08L *1/28;* **E01C** *3/04*

U.S. Cl. 260—17 R **28 Claims**

1. A soil stabilizing composition comprising an aqueous solution of calcium polysulfide containing sufficient emulsifier compatible with calcium polysulfide to aid the composition in soil penetration and dispersed particles of an organic polymer of number average molecular weight of about 5,000 to 600,000 and having an average particle size of from about 0.005 to 10 microns, wherein said calcium polysulfide contains an average of from about 2 to about 7 atoms of sulfur per atom of calcium.

4,243,564

REACTION PRODUCTS OF A HYDROLYZED STYRENE-MALEIC ANHYDRIDE COPOLYMER AND A DISPERSED HIGH AMYLOPECTIN STARCH PRODUCT NEUTRALIZED WITH A VOLATILE ALKALI, METHOD OF MAKING SAME, AND COATING COMPOSITIONS COMPRISING SAME

Robert C. Mavis, Lodi, N.J., assignor to Moses Konigsberg, Tenafly, N.J.; Henry A. Fremont, Wyoming, Ohio and G. Howard Kingsley, New London, N.H.

Filed May 18, 1979, Ser. No. 40,228

Int. Cl.[3] C08L *3/12*

U.S. Cl. 260—17.4 ST **11 Claims**

1. The volatile alkali salt of a reaction product in an aqueous medium of a hydrolyzed styrene-maleic anhydride copolymer and a dispersed high amylopectin starch product.

4,243,565

AQUEOUS DISPERSION TYPE COATING COMPOSITION

Sakae Nishino, Komaki; Takao Sakakibara, Kasugai, and Haruhiko Okazaki, Iwakura, allof, Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 863,147, Dec. 21, 1977, abandoned, which is a continuation of Ser. No. 670,006, Mar. 24, 1976, abandoned. This application Aug. 10, 1979, Ser. No. 65,753

Claims priority, application Japan, Mar. 28, 1975, 50-37662; Mar. 9, 1976, 51-25224

Int. Cl.[3] C08L *91/00;* **C09D** *3/52*

U.S. Cl. 260—22 CQ **23 Claims**

11. A heat curable aqueous dispersion coating composition comprising (a) 90 to 30 parts by weight of an aqueous medium, (b) 10 to 70 parts of water-insoluble synthetic resin particles having a softening point of 5° to 120° C. and an average particle size of 1 to 30μ, (c) separate particles of a scaly aluminum pigment in which the short diameter: long diameter ratio in the particles is 1: at least 10 and the long diameter is not larger than 100μ, in an amount of 0.05 to 30% by weight based on the resin particles and (d) a water-dilutable resin in an amount of up to 30% by weight based on the resin particles, said resin particles being selected from (1) a mixture in the respective particles of at least two types of synthetic resins capable of reacting with each other upon heating or (2) a mixture in the respective particles of a synthetic resin and a curing agent for said resin capable of causing curing of said resin upon heating.

4,243,566

PREPARATION OF LATEX FROM SOLVENT DISPERSED POLYMER COMPOSITION

Oliver W. Burke, Jr., deceased, late of Fort Lauderdale, Fla. (by Norma Scala, administratrix), assignor to Exxon Research and Engineering Company, Linden, N.J.

Division of Ser. No. 323,381, Jan. 15, 1973, Pat. No. 3,862,078, which is a continuation-in-part of Ser. No. 226,419, Feb. 15, 1972, Pat. No. 3,879,327, which is a continuation-in-part of Ser. No. 817,494, Apr. 18, 1969, abandoned, and a continuation-in-part of Ser. No. 621,997, Mar. 7, 1967, Pat. No. 3,502,917, Ser. No. 691,823, Dec. 19, 1967, abandoned, Ser. No. 767,790, Oct. 15, 1968, Pat. No. 3,644,263, and Ser. No. 784,596, Dec. 18, 1968, Pat. No. 3,622,127. This application Jan. 8, 1975, Ser. No. 539,607

Int. Cl.[3] C08L *23/16, 7/02*

U.S. Cl. 260—29.6 R **34 Claims**

1. In the formation of the latex from a solvent dispersed polymer composition, by a process which comprises

(1) providing a dispersion of the polymer composition in essentially water-immiscible volatile solvent which itself or as an azeotrope with water has a boiling point lower than that of water at atmospheric pressure,

(2) adding water and emulsifier to said dispersion in proportions to form an emulsion having water as its continuum and emulsifying the same so that the discontinuous phase thereof is in particles of precursor latex size,

(3) stripping the solvent from the emulsion to form an essentially solvent free latex, and

(4) recovering the latex product,

the improvement which consists in the combination in the process of the further steps of

(5) providing a moving flow of gas comprising steam as an initial continuous phase,

(6) dispersing the emulsion formed in step (2) into said flow of gas as the initial continuous phase while subjecting the phases to a decrease of pressure and maintaining the temperature thereof below the limiting temperature for stability of the emulsion, thereby vaporizing solvent from the dispersed droplets and forming essentially solvent free droplets of latex and vapor,

(7) establishing a separating zone maintained at a pressure below the decreased pressure attained in step (6),

(8) establishing a flow of latex of the selected high polymer

other than the flow of steps (5) and (6) through said separating zone,

(9) introducing into said separating zone the droplets of latex and vapor produced by step (6) and impinging said droplets upon the flow of latex therein,

(10) withdrawing vapor from said separating zone,

(11) withdrawing the combined latex from said separating zone, and

(12) during step (6) and prior to the practice of step (9),

(a) essentially avoiding impacting of the dispersed droplets on solid surfaces at high velocities capable of effecting agglomeration of polymer of the droplets, and

(b) maintaining on the flowing dispersion, until the solvent vaporization from the dispersed droplets is essentially complete, a pressure gradient which is not so large as to destabilize the latex being formed.

4,243,567

MEDICAL COMPOSITIONS

William D. Potter, Bishop's Stortford, England, assignor to Smith & Nephew Research Limited, Harlow, England

Filed Dec. 2, 1977, Ser. No. 856,938

Claims priority, application United Kingdom, Dec. 3, 1976, 50578/76; Jun. 3, 1977, 23789/77; Nov. 18, 1977, 48193/77

Int. Cl.³ C08L *33/02*

U.S. Cl. 260—29.6 MM **28 Claims**

1. A method for the production of a cement which comprises bringing into contact (a) a phosphate or borate glass containing at least one multivalent metal, said glass being present in particulate and/or fibrous form and being wholly or substantially soluble in aqueous conditions to form at least one reactive component capable of crosslinking a poly (carboxylic acid) and (b) a poly (carboxylic acid) or precursor therefor or partially crosslinked form thereof and (c) an aqueous medium.

4,243,568

ETHYLENE COPOLYMER COMPOSITIONS AND PROCESS FOR THE PREPARATION THEREOF

Peter Brown, Harlow, England, assignor to Polymer Investments N.V., Curacao, Netherlands Antilles, Netherlands Antilles

Filed Feb. 23, 1979, Ser. No. 14,452

Claims priority, application United Kingdom, Feb. 23, 1978, 7361/78

Int. Cl.³ C08L *31/04, 23/08*

U.S. Cl. 260—29.6 R **26 Claims**

1. A process for preparing a composition comprising an ethylene copolymer and a liquid hydrocarbon, the process comprising mixing an ethylene copolymer which is in the form of a solid powder with from 40 to 220 parts by weight per 100 parts by weight of ethylene copolymer of a liquid hydrocarbon to form a blend of discrete solid particles comprising at least two ingredients, the resulting composition being capable of flowing freely, said liquid hydrocarbon being one which does not exude from a fused mass of ethylene copolymer and liquid hydrocarbon obtained by mixing 50 g of powdered copolymer with the liquid hydrocarbon in the range specified in a metal dish, heating the dish at 120° C. to fuse the polymer, cooling the dish, holding the dish at minus 20° C. for 18 hours and then allowing the dish to warm to room temperature.

4,243,569

HIGH SOLIDS COMPOSITIONS CONTAINING ESTER DIOL ALKOXYLATE AND AQUEOUS ACRYLIC LATEX

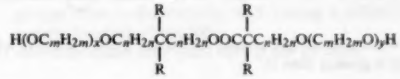
Joseph V. Koleske, Charleston; Robert J. Knopf, Saint Albans, and Oliver W. Smith, South Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 837,731, Sep. 29, 1977, Pat. No. 4,158,652. This application Feb. 26, 1979, Ser. No. 15,424

Int. Cl.³ C08L *33/08, 33/14*

U.S. Cl. 260—29.6 TA **4 Claims**

1. A high solids composition comprising a blend of (I) from 5 to 50 weight percent, based on the total solids content of the latex, of an ester diol alkoxylate of the formula:



wherein m is an integer having a value of from 2 to 4; n is an integer having a value of from 1 to 5; x and y are integers each having a value of from 1 to 20 and R is an unsubstituted or substituted alkyl group having from 1 to 8 carbon atoms and (II) an aqueous acrylic latex.

4,243,570

PLASTICIZED POLYCARBONATE COMPOSITION

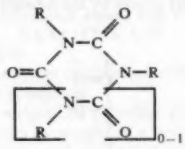
Victor Mark, Evansville, Ind., and Phillip S. Wilson, Louisville, Ky., assignors to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 958,247, Nov. 6, 1978, abandoned, which is a continuation of Ser. No. 811,063, Jun. 29, 1977, abandoned. This application Jul. 25, 1979, Ser. No. 60,667

Int. Cl.³ C08K *5/34*

U.S. Cl. 260—30.2 **7 Claims**

1. A plasticized polycarbonate composition comprising in admixture a high molecular weight aromatic carbonate polymer and a minor amount of an organic isocyanurate plasticizer consisting of the following formula:



R is independently selected from the group consisting of C_1 toC_{30} alkyl; cycloalkyl or 4 to 10 carbon atoms; hydroxyl free aryl of 6 to 14 carbon atoms and substituted hydroxyl free aryl wherein the substituents are C_1 to C_{30} alkyl, halogen, C_1 to C_{30} alkoxy, aryloxy of 6 to 14 carbon atoms, alkylthio of 1 to 30 carbon atoms and arylthio of 6 to 14 carbon atoms.

4,243,571

STAIN-RESISTANT VINYL CHLORIDE POLYMER COMPOSITIONS PLASTICIZED WITH ALKYLBENZYL SUCCINATES, GLUTARATES OR MIXTURES THEREOF

James D. Gabbard, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1978, Ser. No. 972,763

Int. Cl.³ C08K *5/09*

U.S. Cl. 260—31.8 H **14 Claims**

1. A vinyl chloride polymer composition comprising a plasticizing amount of prime ester at least about 40% by weight of which is diester selected from alkyl benzyl succinates, glutarates and mixtures thereof in which said alkyl is from about C_3 to about C_6, said amount being less than 35 phr.

4,243,572

ALKYL ALKYLARYL ADIPATE PLASTICIZERS FOR POLYVINYL BUTYRAL

Daniel Dages, Les Mureaux, France, assignor to Saint-Gobain Industries, Aubervilliers, France

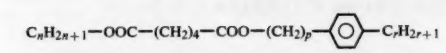
Filed Nov. 19, 1979, Ser. No. 95,786

Claims priority, application France, Nov. 21, 1978, 78 32737

Int. Cl.³ C08K *5/11*

U.S. Cl. 260—31.8 R **20 Claims**

1. A method for plasticizing polyvinyl butyral which comprises admixing polyvinyl butyral and alkyl alkylaryl adipate of the formula:



where n is an integer greater than 0 and p and r integers whose sum is greater than 0.

4,243,573

ACRYLIC GRAFT COPOLYMERS AND COATING COMPOSITIONS THEREOF

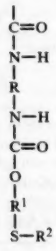
John A. Simms, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 972,426, Dec. 22, 1978, which is a division of Ser. No. 820,879, Aug. 1, 1977, Pat. No. 4,151,227. This application Nov. 7, 1979, Ser. No. 91,891

Int. Cl.³ C08F *283/02*

U.S. Cl. 260—33.6 UA **8 Claims**

1. A coating composition comprising 5–60% by weight of a film forming constituent of a graft copolymer and 50–95% by weight of a liquid, wherein the graft copolymer consisting essentially of about 25–95% by weight of a polyester backbone and about 5–75% by weight of acrylic side chains; wherein the backbone contains pendent hydroxyl groups before the attachment of side chains by replacement of a hydrogen of at least one of the hydroxyl groups by the formula



where R is an aliphatic group, a cycloaliphatic group or an aromatic group; R^1 is an alkylene group having 2–6 carbon atoms, R^2, which forms a side chain, is an acrylic polymer segment.

4,243,574

POLY(META-PHENYLENE ISOPHTHALAMIDE) MOLDING COMPOSITIONS

Carl H. Manwiller, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 30, 1979, Ser. No. 25,565

Int. Cl.³ C08K *3/04, 3/30*

U.S. Cl. 260—37 N **9 Claims**

1. A coalescible and densifiable powder of poly(meta-phenylene isophthalamide) having good flow characteristics, a density of about from 1.0 to 1.3 g/cc when pressed into a preform and a density when sintered of at least about 1.24 g/cc and containing about from 1–75% by weight, based on the total weight of the composition, of a particulate additive, the additive having been present during the precipitation of the poly(meta-phenylene isophthalamide, and the precipitant having been maintained at a temperature of about from 10°–30° C. during the precipitation.

4,243,575

FILLED THERMOPLASTIC RESIN COMPOSITIONS

Donald C. Myers, Stephentown, N.Y., and Phillip S. Wilson, Louisville, Ky., assignors to General Electric Company, Pittsfield, Mass.

Filed Jul. 25, 1979, Ser. No. 60,742

Int. Cl.³ C08L *67/00*

U.S. Cl. 260—37 PC **24 Claims**

1. A filled polycarbonate composition comprising an admixture of a high molecular weight aromatic polycarbonate resin and a particulate filler in an amount of about 2–40% by weight of the total weight of said polycarbonate composition, said particulate filler consisting essentially of an amorphous, alumino silicate glass recovered from flyash with the magnatile portion thereof removed and in the form of solid spheres having a specific gravity of about 2.4, a bulk density of about 75–80 lbs./ft.^{3}, a mass median diameter of about 5–6 microns, and a pH of about 3–8.

4,243,576

BLENDS OF ETHYLENE-VINYL ACETATE COPOLYMER RUBBERS WITH ELASTOMERS

Joseph Fischer, and John M. Hoyt, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,149

Int. Cl.³ C08L *23/16*

U.S. Cl. 260—42.15 **9 Claims**

1. A polymer blend demonstrating improved Mooney viscosity and green strength comprising from about 90% to about 60% by weight of an amorphous ethylene-vinyl acetate copolymer containing from about 40% to about 60% copolymerized vinyl acetate by weight, and from about 10% to about 40% by weight of a modifying elastomer having a Mooney viscosity of from about 65 to about 115 ML_{1+4} at 100° C. wherein the modifying elastomer is selected from the group consisting of high viscosity ethylene propylene rubber and ethylene-propylene diene monomer terpolymer.

4,243,577

MODIFIED THERMOPLASTIC RESINS

Cherry C. Chiao, San Ramon, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 942,094, Sep. 13, 1978, abandoned. This application Jun. 18, 1979, Ser. No. 49,701

Int. Cl.³ C08K *3/04*

U.S. Cl. 260—42.47 **9 Claims**

1. A nitrile rubber, carbon black concentrate composition comprising (1) from about 2 to about 50 weight % carbon black, (2) from about 20 to about 40 weight % of a butadiene-acrylonitrile rubbery copolymer, with the balance being essentially (3) ABS terpolymer.

4,243,578

DENTAL FILLING COMPOSITION

Denis J. O'Sullivan; Bernard J. Bolger, and T. Eisirt Casey, all of Dublin, Ireland, assignors to Loctite Corporation, Newington, Conn.

Continuation of Ser. No. 800,599, May 25, 1977, abandoned, which is a continuation of Ser. No. 415,454, Nov. 16, 1972, abandoned. This application Jan. 17, 1980, Ser. No. 112,878

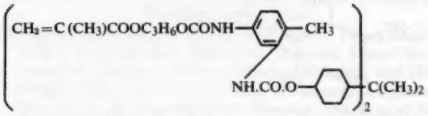
Claims priority, application Ireland, Nov. 16, 1972, 1580/72

Int. Cl.³ C08K *3/40*

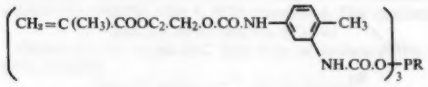
U.S. Cl. 260—42.52 **1 Claim**

1. A dental filling composition which comprises: a mixture of

(1) polymerizable acrylate ester monomers, the structure of one of which conforms to (a) the formula



and the other structure which conforms to (b) the formula



wherein PR represents a propylene triol oligomer residue;

(2) about 0.1 to about 7 percent by weight of a free radical polymerization initiator, based upon the weight of the mixture of the two monomers; and

(3) about 40 to 95 percent by weight glass powder filler, based upon the weight of the composition.

4,243,579

FLAME RETARDANT ALKYLENE-ALKYL ACRYLATE COPOLYMER COMPOSITION

Michael J. Keogh, Bridgewater, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,336

Int. Cl.³ C08K *3/16*

U.S. Cl. 260—45.7 R **25 Claims**

1. A flame retardant alkylene-alkyl acrylate copolymer composition comprising alkylene-alkyl acrylate copolymer, from about 1 to 30 weight percent of halogenated flame retardant additive and from about 0.5 to 20 weight percent of at least one of calcium or magnesium oxide, carbonate, hydroxide or sulfate; said weight percents based on the total weight of the composition.

4,243,580

ELASTOMERIC COPOLYETHER-ESTER/POLYOXYMETHYLENE

David M. Gale, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 749,219, Dec. 10, 1976, abandoned. This application Jan. 8, 1979, Ser. No. 1,931

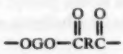
Int. Cl.³ C08K *5/34*; C08L *67/06*; C08K *5/20, 5/18*

U.S. Cl. 260—45.8 NT **19 Claims**

1. An elastomeric molding composition comprising a mixture of:

(A) about 10–40 percent by weight of an oxymethylene polymer consisting essentially of about 95–100 percent by weight of oxymethylene units and 0 to about 5 percent by weight of oxyalkylene units of 2–8 adjacent carbon atoms in the main chain, said polymer having a number average molecular weight of about 1000–500,000;

(B) about 90–60 percent by weight of a copolyether-ester having an inherent viscosity of at least 1, as measured in m-cresol in 0.1 g/dl concentration at 30° C., said copolyether-ester consisting essentially of a multiplicity of recurring intralinear long-chain and short-chain ester units connected head-to-tail through ester linkages, said long-chain ester units having the formula:

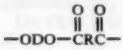
 (a)

wherein

G is a divalent radical remaining after removal of terminal hydroxyl groups from a poly(alkylene oxide) glycol having a carbon-to-oxygen mole ratio of about 2–4.3 and a molecular weight of about 400–6000; and

R is a divalent radical remaining after removal of carboxyl groups from a dicarboxylic acid having a molecular weight less than about 300;

and said short-chain ester units having the formula:

 (b)

wherein

D is a divalent radical remaining after removal of hydroxyl groups from a low molecular weight diol having a molecular weight less than about 250; and

R is as defined above;

with the proviso that the short-chain ester units constitute about 15–95 percent by weight and the long-chain ester units constitute about 85–5 percent by weight of the copolyether-ester.

4,243,581

STABILIZED POLYPROPYLENE COMPOSITION

Motonobu Minagawa; Mitsuo Akutsu, both of Urawa; Hiroshi Fujiwara, Omiya, and Masayuki Kashiki, Soka, all of Japan, assignors to Maruzen Oil Co., Ltd., Osaka, Japan

Filed Aug. 17, 1978, Ser. No. 934,654

Claims priority, application Japan, Aug. 17, 1977, 52-98928

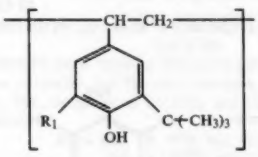
Int. Cl.³ C08K *5/36*

U.S. Cl. 260—45.85 S **6 Claims**

1. A propylene polymer composition stabilized against oxidative degradation comprising

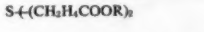
(1) 100 parts by weight of a propylene polymer,

(2) 0.001 to 5 parts by weight of a poly(tert.-butylated p-vinylphenol) composed substantially of monomeric units of the formula (I)

 (I)

wherein R_1 represents a hydrogen atom or a tertiary butyl group, and

(3) 0.001 to 5 parts by weight of a dialkylthiodipropionate of the formula (II)

 (II)

wherein R represents an alkyl group containing 10 to 20 carbon atoms.

4,243,582

NOVEL GLYCOPROTEINS FROM BOVINE CARTILAGE

Curtis A. Spilburg, St. Louis, and James M. Schuck, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 26, 1979, Ser. No. 33,346

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 R **3 Claims**

1. A high purity glycoprotein isolated from bovine cartilage selected from the group consisting of Component A and Component B and having the following characteristics:

(a) amino acid composition as follows:

Amino Acid	Number of Residues	
	Component A	Component B
LYS	25	19
HIS	10	9
ARG	13	12
ASP	39	35
THR	23	20
SER	31	24
GLU	47	40
PRO	28	23
GLY	22	19
ALA	34	28
½ CYS	10	4
VAL	31	27
MET	5	4
ILE	15	14
LEU	37	35
TYR	10	8
PHE	16	15

said number of residues for each amino acid being subject to a variation of about ± 10% from the number stated;

(b) carbohydrate composition comprising hexose, fucose, sialic acid and hexosamine;

(c) molecular weight of about 65,000 ± 10,000;

(d) isoelectric point of about 3.8; and

(e) having activity as an inhibitor of endothelial cell growth and as a trypsin inhibitor.

4,243,583

PROCESS FOR THE PREPARATION OF AZO DYES

Robert Portmann, Pratteln, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

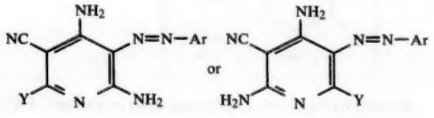
Filed May 25, 1979, Ser. No. 42,696

Claims priority, application Switzerland, Jun. 2, 1978, 6077/78

Int. Cl.[3] **C07C** *27/04, 120/00, 121/82*

U.S. Cl. 260—156 **13 Claims**

1. A process for the preparation of an azo dye of the formula

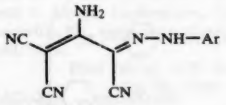


or of a mixture thereof, in which Ar is a substituted or unsubstituted phenyl, naphthyl or aromatic heterocyclic radical and Y is a group of the formula —O—R, —S—R or

in which R is a substituted or unsubstituted alkyl, aryl or heterocyclic radical and R_1 and R_2 independently of one another are hydrogen or a substituted or unsubstituted alkyl, aryl or heterocyclic radical, and the groups R_1 and R_2, together with the nitrogen atom to which they are bonded, can form a ring, which comprises coupling a diazonium salt of the formula

$$Ar\,N_2^{\oplus}\,X^{\ominus}$$

in which Ar is as defined above and $X^{\ominus}$ is an anion, with dimeric malonodinitrile to give an intermediate of the formula



in which Ar is as defined above, and cyclising this intermediate with an alcohol or thioalcohol of the formula ROH or RSH or an amine of the formula

in which formulae R, R_1 and R_2 are as defined above, it being necessary for the amine to be present in the form of the ammonium salt during the reaction.

4,243,584

MONOAZO DYESTUFFS CONTAINING DIAZO COMPONENT SUBSTITUTED BY DISULFIMIDE AND TRIFLUOROMETHYL GROUPS

Richard Sommer, Leverkusen; Gerhard Wolfrum, Bergisch-Neukirchen, and Gerhard Büttner, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

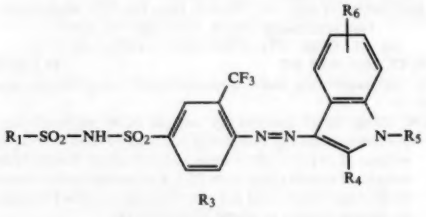
Continuation of Ser. No. 486,907, Jul. 9, 1974, abandoned. This application Jun. 27, 1978, Ser. No. 919,482

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1973, 2335849

Int. Cl.[3] **C09B** *29/08, 29/36, 29/38;* **D06P** *3/26*

U.S. Cl. 260—165 **4 Claims**

1. Monoazo dyestuff having the formula



in which

R_1 is phenyl; naphthyl; phenyl substituted with alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, halogen, cyano or nitro; alkyl of 1–4 carbon atoms; or dialkylamino in which the alkyl groups contain 1–4 carbon atoms;

R_3 is hydrogen, halogen, alkyl with 1–4 carbon atoms; alkoxy with 1–4 carbon atoms or trifluoromethyl;

R_4 is alkyl of 1–4 carbon atoms; phenyl; naphthyl; or phenyl or naphthyl substituted by halogen, alkyl of 1–4 carbon atoms or phenyl;

R_5 is hydrogen or unsubstituted alkyl with 1–4 carbon atoms; and

R_6 is hydrogen, cyano, halogen, alkyl with 1–4 carbon atoms or alkoxy with 1–4 carbon atoms.

4,243,585

BENDODIAZOCINE DERIVATIVES AND PROCESS OF MAKING THE SAME

Wolfgang Milkowski, Burgdorf; Renke Budden, Peine; Siegfried Funke, Hanover; Rolf Hüschens, Hanover; Hans-Günther Liepmann, Hanover; Werner Stühmer, Eldagsen, and Horst Zeugner, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

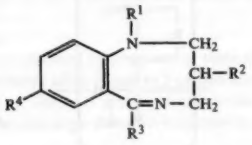
Continuation of Ser. No. 588,969, Jun. 20, 1975, abandoned, which is a continuation-in-part of Ser. No. 355,986, May 1, 1973, Pat. No. 3,998,809, Ser. No. 355,987, May 1, 1973, abandoned, and Ser. No. 355,989, May 1, 1973, abandoned. This application Jan. 23, 1978, Ser. No. 871,741

Claims priority, application Fed. Rep. of Germany, May 3, 1972, 2221558

Int. Cl.[3] A61K *31/55;* C07D *245/06*

U.S. Cl. 260—239 BD 19 Claims

1. A benzodiazocine having the formula



in which

R^1 is methyl,

R^2 is a hydroxy, chloro, acetoxy or benzoyloxy radical,

R^3 is a phenyl, 2-chlorophenyl or 3,4,5-trimethoxyphenyl radical, and

R^4 is a hydrogen or chloro radical.

4,243,586

STEROIDAL-17-SPIRO-DIHYDROFURANONES

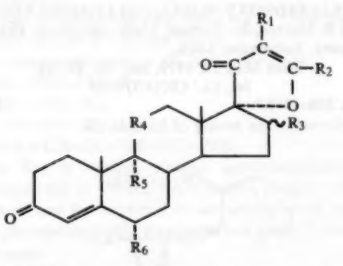
Sam T. Chao, East Windsor, and Ravi K. Varma, Belle Mead, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 18, 1980, Ser. No. 113,153

Int. Cl.[3] C07J *71/00*

U.S. Cl. 260—239.55 R 11 Claims

1. A steroid having the formula



or the 1,2-dehydro derivative thereof, wherein R_1 is bromine, chlorine, or fluorine; R_2 is alkyl, aryl, or arylalkyl; R_3 is hydrogen, α-methyl, β-methyl, hydroxy or a conventional hydrolyzable ester thereof; R_4 is carbonyl or β-hydroxymethylene; R_5 is bromine, chlorine or fluorine; and R_6 is hydrogen, bromine, fluorine or methyl.

4,243,587

PROCESS FOR 3β-AMINOAZETIDIN-2-ONES

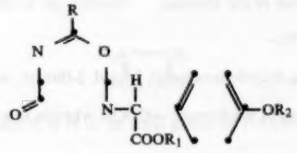
Robin D. G. Cooper; Gary A. Koppel, and Lawrence J. McShane, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 933,707, Aug. 15, 1978, Pat. No. 4,180,507, which is a division of Ser. No. 775,240, Mar. 7, 1977, Pat. No. 4,127,568. This application May 21, 1979, Ser. No. 41,282

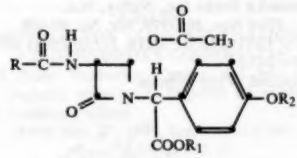
Int. Cl.[3] C07D *498/04*

U.S. Cl. 260—245.4 2 Claims

1. The process for preparing the oxazolineazetidinone of the formula



wherein R is C_1–C_3 alkyl, phenyl or benzyl; and R_1 and R_2 independently are benzyl, 4-methoxybenzyl, or diphenylmethyl; which comprises treating in an inert solvent a 3-acylamino-4α-acetoxyazetidinone ester of the formula



wherein R, R_1, and R_2 have the above-defined meanings with hydrogen chloride at a temperature between about −10° C. and about 25° C. and recovering said oxazoline-azetidinone.

4,243,588

PROCESS FOR NOVEL OXAZOLINOAZETIDINONES

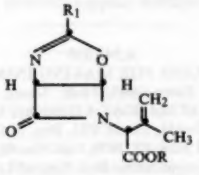
Wayne A. Spitzer, and Theodore Goodson, Jr., both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 19, 1979, Ser. No. 50,041

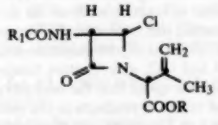
Int. Cl.[3] C07D *498/04*

U.S. Cl. 260—245.4 5 Claims

1. The process for preparing a compound of the formula



which comprises reacting a chloroazetidinone compound of the formula



with lead difluoride in dimethyl sulfoxide at about 0° to about

60° C. wherein in the above formulas R is hydrogen or a carboxylic acid protecting group and R_1 is

(a) hydrogen, C_1–C_4 alkyl or halo(C_1–C_4 alkyl);

(b) a group R_6 wherein R_6 is phenyl or phenyl substituted by 1 or 2 groups selected from the group consisting of fluoro, chloro, bromo, iodo, nitro, cyano, C_1–C_4 alkyl, C_1–C_4 alkoxy, protected hydroxy, carbamyl, trifluoromethyl and methanesulfonamido;

(c) a group of the formula

$$R_6(O)_mCH_2-$$

wherein m is 1 or 0 and R_6 is as defined above;

(d) a group of the formula

$$R_{6a}CH_2-$$

wherein R_{5a} is cyclohexadienyl, 2-furyl, 2-thienyl, or 3-thienyl; or

(e) a group of the formula —COOR wherein R is as defined above.

4,243,589

TRIAZOLOBENZAZEPINES AND PROCESSES FOR THEIR PRODUCTION

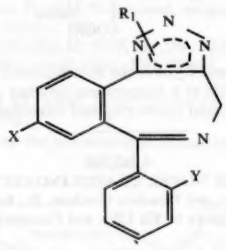
Rodney I. Fryer, North Caldwell; Eugene J. Trybulski, Parsippany, and Armin Walser, West Caldwell, all of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 30, 1979, Ser. No. 99,109

Int. Cl.[3] **C07D** *249/04;* **A61K** *31/55;* **C07D** *487/04*

U.S. Cl. 260—245.5 **8 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or lower alkyl and X and Y are hydrogen or halogen

and the pharmaceutically acceptable salts thereof.

7. The compound: 8-chloro-6-(2-fluorophenyl)-2H,4H-[1,2,3]triazolo[4,5-a][2]benzazepine.

4,243,590

PROCESS FOR MAKING INDOLE

Kurt Handrick, Essen-Steele, and Georg Kölling, Essen-Bredeney, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed May 22, 1979, Ser. No. 41,516

Claims priority, application Fed. Rep. of Germany, May 26, 1978, 2822907

Int. Cl.[3] **C07D** *209/08*

U.S. Cl. 260—319.1 **7 Claims**

1. In a process for making indole of the type wherein 1,2,3,4-tetrahydroquinoline is reacted with steam in a reactor filled with an inert material, the improvement comprising introducing a mixture of 1,2,3,4-tetrahydroquinoline and steam, in a mol ratio between 1:3 and 1:12, at a reaction temperature of about 650° to 750° C., at such speed that the necessary residence time of the starting and reaction products in the main reaction zone is limited to about 1 to 2 seconds, and then isolating and recovering the indole from the reaction product, whereby a high yield of indole is obtained and formation of byproducts is suppressed.

4,243,591

POLY(VINYL PHOSPHONOMETHYLENE AMINO CARBOXYLATES) AND PROCESS FOR PREPARATION

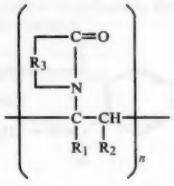
Ralph W. Magin, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 783,360, Mar. 31, 1977, abandoned, and a continuation-in-part of Ser. No. 723,390, Sep. 15, 1976, abandoned, and a continuation of Ser. No. 630,231, Nov. 10, 1975, abandoned. This application Mar. 2, 1979, Ser. No. 16,859

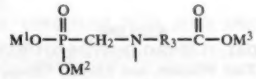
Int. Cl.[3] **C07D** *401/14, 403/14*

U.S. Cl. 260—326.22 **18 Claims**

1. A polyvinyl compound having the formula:



wherein R_1 and R_2 are individually selected from hydrogen, phenyl and alkyl having from 1 to about 4 carbon atoms; R_3 is selected from benzylene, phenylene, naphthylene and alkylene, radicals having from about 3 to about 15 carbon atoms, said radicals being unsubstituted or substituted with C_1–C_6 alkyl, hydroxyl, chlorine, fluorine or bromine; and n is an integer from about 4 to about 2,000; wherein each of from one to n of the cyclic amide group in said compound has been replaced with a phosphonomethylene amino carboxylate having the formula:



wherein M^1, M^2, and M^3 are individually selected from hydrogen, a metallic element, ammonium and alkyl ammonium having up to about 10 carbon atoms.

4,243,592

9,11-DIDEOXY-10-OXA-TXB COMPOUNDS

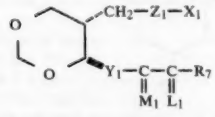
Douglas R. Morton, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 12, 1979, Ser. No. 19,752

Int. Cl.[3] **C07D** *319/04*

U.S. Cl. 260—340.7 **3 Claims**

1. A thromboxane analog of formula III,



III

wherein Y_1 is

(1) trans—CH=CH—,

(2) cis—CH=CH—,

(3) $—CH_2CH_2—$, or

(4) —C≡C—,

wherein M_1 is α-R_5:β-OH, α-OH:β-R_5, or α-H:β-H, wherein R_5 is hydrogen or methyl;

wherein L_1 is α-R_3:β-R_4, α-R_4:β-R_3, or a mixture of α-R_3:β-R_4 and β-R_3:α-R_4, wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein Z_1 is

(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$(CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,
(7) —$(CH_2)_2$—O—$(CH_2)_g$—CH_2—, or
(8) trans—CH_2—$(CH_2)_g$—CH_2—CH=CH—;

wherein g is one, 2, or 3;

wherein R_7 is

(1) —$(CH_2)_m$—CH_3, wherein m is an integer from one to 5, inclusive;
(2) phenoxy;
(3) phenoxy substituted by one, two, or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
(4) phenyl;
(5) phenyl substituted by one, two or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl;
(6) phenylmethyl, phenylethyl, or phenylpropyl; or
(7) phenylmethyl, phenylethyl, or phenylpropyl substituted by one, two, or three chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, with the proviso that not more than two substituents are other than alkyl; with the proviso that R_7 is phenoxy or substituted phenoxy, only when R_3 and R_4 are hydrogen or methyl, being the same or different;

wherein X_1 is

(1) —$COOR_1$, wherein R_1 is
(a) hydrogen;
(b) alkyl of one to 12 carbon atoms, inclusive;
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive;
(d) aralkyl of 7 to 12 carbon atoms, inclusive;
(e) phenyl;
(f) phenyl substituted with one, two, or three chloro or alkyl of one to 3 carbon atoms;
(g) phenyl substituted in the para position by
(i) —NH—CO—R_{25}
(ii) —CO—R_{26}
(iii) —O—CO—R_{27}
(iv) —CH=N—NH—CO—NH_2

wherein R_{25} is methyl, phenyl, acetamidophenyl, benzamidophenyl, or —NH_2; R_{26} is methyl, phenyl, —NH_2, or methoxy; and R_{27} is phenyl or acetamidophenyl, inclusive, or a pharmacologically acceptable salt thereof when R_1 is hydrogen;

(2) —CH_2OH; or
(3) —$CH_2NL_2L_3$, wherein L_2 and L_3 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different, or a pharmacologically acceptable acid addition salt thereof wherein X_1 is —$CH_2NL_2L_3$.

4,243,593

PREPARATION OF FURAN COMPOUNDS

Joseph M. Fremont, Glen Mills, Pa., and Donald I. Garnett, Hockessin, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 29,101, Apr. 10, 1979. This application Jan. 18, 1980, Ser. No. 109,264

Int. Cl.³ C07D *307/36*

U.S. Cl. 260—346.11 **20 Claims**

1. A process for preparing a furan compound comprising: contacting a catalyst consisting essentially of a support having deposited thereon copper chloride; optionally, an alkali metal chloride; and at least one of palladium chloride and an iodide, in a reaction zone with (1) a molecular oxygen-containing gas, (2) a diolefin of the formula:

where each R is H or an alkyl group of 1–4 carbon atoms, and

each R_1 is H, a halide or an alkyl group of 1–4 carbon atoms, with proviso that the total number of carbon atoms does not exceed 8,

and (3) water vapor containing about 0.5–5% by weight HCl.

4,243,594

PROCESS FOR THE 13-DEOXYGENATION OF A 3,13-DEHYDROXY-GIBBERELLIN

Michael H. Beale, Vancouver, Canada, and Jake MacMillan, Bristol, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 27, 1978, Ser. No. 963,743

Int. Cl.³ C07D *307/00*

U.S. Cl. 260—343.3 G **8 Claims**

1. A process for the 13-deoxygenation of a 3,13-dihydroxy-gibberellin which comprises esterifying the 13-hydroxy group in a 3,13-dihydroxy gibberellin by reaction with a sulphonic acid or a carboxylic acid or a thiocarboxylic acid or an esterifiable derivative of one of said acids to form a 13-ester and then treating the 13-ester with a trialkyltin hydride in the presence of a free-radical initiator to reduce the 13-ester and form a 13-deoxygenated gibberellin, provided that when the esterifiable derivative is the acid chloride, the 6-carboxy group of the 3,13-dihydroxy gibberellin, which is converted to the corresponding acid chloride, is reinstated by treatment with an alkali, and further provided that the 3-hydroxy group and any further hydroxy group in the gibberellin is protected by a protecting group before esterification of the 13-hydroxy group, and each protecting group is removed after the 13-deoxygenation.

4,243,595

15-SUBSTITUTED-OMEGA-PENTANORPROSTAGLANDINS

Hans-Jurgen E. Hess, Old Lyme; Michael R. Johnson, Gales Ferry; Jasjit S. Bindra, Groton, and Thomas K. Schaaf, Old Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

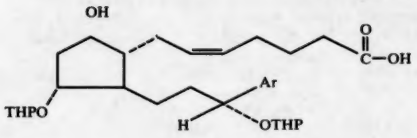
Division of Ser. No. 485,491, Jul. 3, 1974, Pat. No. 3,974,213, which is a continuation-in-part of Ser. No. 425,519, Dec. 17, 1973, abandoned, which is a continuation-in-part of Ser. No. 271,220, Jul. 13, 1972, abandoned. This application Jul. 15, 1976, Ser. No. 705,769

Claims priority, application New Zealand, Jul. 4, 1973, 171269

Int. Cl.³ C07D *309/12, 317/44*

U.S. Cl. 260—345.7 P **4 Claims**

1. A compound of the structure:

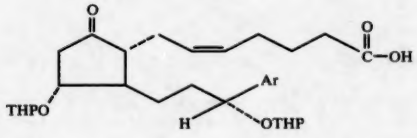


wherein

Ar is α- or β-naphthyl; phenyl; 3,4-dimethoxyphenyl; 3,4-methylenedioxyphenyl; 3,4,5-trimethoxyphenyl; or monosubstituted phenyl wherein said substituent is halo, trifluoromethyl, phenyl, lower alkyl or lower alkoxy and

THP is 2-tetrahydropyranyl.

2. A compound of the structure:



wherein

Ar is α- or β-naphthyl; phenyl; 3,4-dimethoxyphenyl; 3,4-methylenedioxyphenyl; 3,4,5-trimethoxyphenyl; or monosubstituted phenyl wherein said substituent is halo, trifluoromethyl, phenyl, lower alkyl or lower alkoxy and

THP is 2-tetrahydropyranyl.

4,243,596

(5-NITRO-2-FURYL)VINYLENE-2-TRIMETHYLAMMONIUM BROMIDE AND METHOD OF PREPARING SAME

Daniel Vegh, and Jaroslav Kovac, both of Bratislava, Czechoslovakia, assignors to Rektorat Slovenskej vysokej skoly technickej, Bratislava, Czechoslovakia

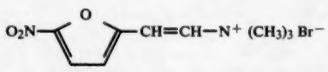
Continuation-in-part of Ser. No. 860,977, Dec. 15, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,831

Claims priority, application Czechoslovakia, Dec. 15, 1976, 8191-76

Int. Cl.³ C07D *307/73*

U.S. Cl. 260—347.7 **1 Claim**

1. (5-Nitro-2-furyl)vinylene-2-trimethylammonium bromide having the formula



4,243,597

VOLATILE URANYL COMPOUNDS

Richard B. Hall, Clark; Andrew Kaldor, Watchung; George M. Kramer, Berkeley Heights, all of N.J., and Martin B. Dines, Santa Ana, Calif., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 868,450, Jan. 10, 1978, abandoned, which is a continuation of Ser. No. 751,901, Dec. 17, 1976, abandoned. This application Nov. 16, 1978, Ser. No. 961,363

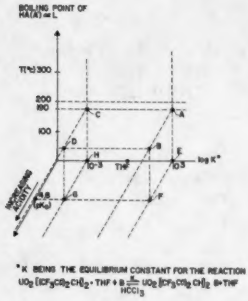
Int. Cl.³ C07D *307/12*; C07F *5/00*

U.S. Cl. 260—347.8 **14 Claims**

1. A composition of matter having the formula:

$UO_2AA'L_n$

n being 0 or 1, wherein A and A' comprise anions whose conjugate acids have boiling points of less than about 200° C. and pK_a values of 4.8 or lower, L comprises a neutral ligand having a boiling point of less than about 190° C. and an equilibrium constant for exchange with tetrahydrofuran ranging from about 10^{-3} to 10^{3}, and A, A' and L combine to satisfy five or six coordination sites of said uranium atom.



*K BEING THE EQUILIBRIUM CONSTANT FOR THE REACTION

$UO_2[ECF_3CO_2CH]_2 \cdot THF + B \rightleftharpoons UO_2[ECF_3CO_2CH]_2 \cdot B + THF$

HCCl₃

5. The composition of matter of claim 1 wherein n equals 1, and L comprises a neutral ligand selected from the group consisting of isopropanol, ethanol, isobutanol, tert-butanol, ethylacetate, n-propanol, methanol, tetrahydrofuran, acetone, dimethylformamide, and dimethylsulfoxide.

4,243,598

SYNTHESIS OF VITAMIN E

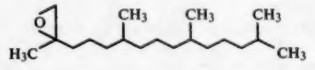
Gary L. Olson, Union County, and Gabriel Saucy, Essex County, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 941,512, Sep. 11, 1978, which is a division of Ser. No. 797,713, May 17, 1977, Pat. No. 4,127,608. This application Sep. 10, 1979, Ser. No. 74,191

Int. Cl.³ C07D *303/04*

U.S. Cl. 260—348.11 **1 Claim**

1. A compound of the formula:



4,243,599

PROCESS FOR SIMULTANEOUSLY PRODUCING P-TOLUIC ACID AND ALKYLENE OXIDE

Nobuo Isogai; Takashi Okawa, and Takako Takeda, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jun. 16, 1976, Ser. No. 696,761

Claims priority, application Japan, Jun. 30, 1975, 50-80734

Int. Cl.³ C07D *301/14*

U.S. Cl. 260—348.25 **11 Claims**

1. A process for simultaneously producing p-toluic acid and an alkylene oxide by epoxidizing a lower olefin with per-p-toluic acid, which comprises adding dipicolinic acid as a stabilizer for peracid to a per-p-toluic acid solution.

4,243,600

PROCESS FOR THE MANUFACTURE OF 1,4-DIAMINOANTHRAQUINONE-2-CARBOXYLIC ACID

Athanassios Tzikas, Pratteln, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Apr. 26, 1979, Ser. No. 33,405

Claims priority, application Switzerland, Apr. 28, 1978, 4649/78

Int. Cl.[3] C07C *103/75*

U.S. Cl. 260—377 7 Claims

1. A process for the manufacture of 1,4-diaminoanthraquinone-2-carboxylic acid, which comprises reacting 1-nitroanthraquinone-2-carboxylic acid or derivatives thereof with hydroxylamine or derivatives thereof, in alcohol/water mixtures at basic value pH values.

4,243,601

CYANO SUBSTITUTED DIPHENOQUINONES AND A PROCESS FOR PREPARING THEM

Zen-ichi Yoshida; Shigeo Yoneda, both of Kyoto; Hideki Murata, Hachiouji; Yutaka Yasuda, Nagaoka, and Saburo Nagakura, Musashino, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo and Zen-Ichi Yoshida, Kyoto, both of, Japan

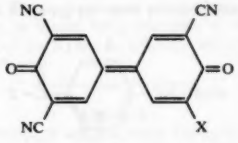
Filed Mar. 7, 1979, Ser. No. 18,261

Claims priority, application Japan, Jul. 12, 1978, 53-84761

Int. Cl.[3] C07C *120/00, 121/48*

U.S. Cl. 260—396 N 6 Claims

1. A compound of the formula



wherein X is a bromine atom or a cyano group.

4,243,602

NOVEL QUATERNARY COMPOUNDS

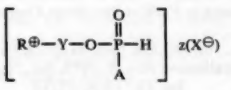
Anthony J. O'Lenick, Jr., Fairlawn, and Raymond L. Mayhew, Summit, both of N.J., assignors to Mona Industries, Paterson, N.J.

Filed Nov. 30, 1978, Ser. No. 965,457

Int. Cl.[3] A23J *7/00;* C07F *9/02;* C11C *3/00*

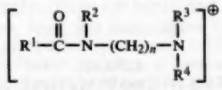
U.S. Cl. 260—403 16 Claims

1. Quaternary compound of the formula



wherein

R is an amidoamine moiety of the formula



wherein

R^1 is alkyl, alkenyl, alkoxy, or hydroxyalkyl of from 5 to 22 carbon atoms each, or aryl or alkaryl of up to 20 carbon atoms;

R^2 is hydrogen or alkyl, hydroxyalkyl or alkenyl of up to 6 carbon atoms each or cycloalkyl of up to 6 carbon atoms, preferably of from 2 to 5 carbon atoms, or polyoxyalkalene of up to 10 carbon atoms;

R^3 and R^4, which may be the same or different, are selected from alkyl, hydroxyalkyl, carboxyalkyl of up to 6 carbon atoms in each alkyl moiety, and polyoxyalkylene of up to 10 carbon atoms;

n is an integer from 2 to 12;

Y is alkylene, optionally interrupted by up to 3 oxygen atoms, of up to 12 carbon atoms, optionally containing a substituent selected from lower alkyl, alkoxy, hydroxy or hydroxyalkyl of not more than 10 carbon atoms each;

A is selected from OM or OYR^+ wherein Y and R are defined as above and

M is an organic radical selected from alkyl or hydroxyalkyl of up to 6 carbon atoms, polyhydroxyalkyl of up to 10 carbon atoms, glyceryl, cycloalkyl of up to 6 carbon atoms, aryl or arylalkyl of up to 10 carbon atoms;

X^- is an anion;

z is an integer from 1 to 2, with the proviso that when A is OM, z is 1 and when A is OYR, z is 2.

4,243,603

PROCESS FOR THE PRODUCTION OF A LIQUID EDIBLE OIL FROM FATTY MATERIALS HAVING A HIGH CONTENT OF SATURATED FATTY ACIDS AND THE OIL PRODUCED BY THE PROCESS

Jean M. Klein, Couderque-Branche, and Albert Lacome, Dunkerque, both of France, assignors to Lesieur-Cotelle & Associes S.A., Hauts de Seine, France

Filed May 31, 1979, Ser. No. 43,935

Claims priority, application France, May 31, 1979, 78 16182

Int. Cl.[3] C11C *3/02*

U.S. Cl. 260—410.7 16 Claims

1. A process for the production of an edible oil from natural fatty substances having a high content of saturated fatty acids, comprising in a first stage, interesterification of the natural fatty substance to be treated at a temperature in the range 20° to 80° C. in the presence of a suitable interesterification catalyst and, in a second stage, subjecting the interesterified fatty material to at least one fractionating step at a temperature in the range −20° to +35° C., by means of a suitable solvent for fractionating fats in order to produce, in a yield of higher than 35%, a fluid fraction substantially comprising unsaturated triglycerides free of trans isomers and having an iodine number of more than 75, an end-of-clouding point lower than 12° C., a content of trisaturated triglycerides less than 0.6%, a content of disaturated-monounsaturated triglycerides less than 10%, and a solidification/liquefaction time at +15° C. comparable to that of peanut oil.

4,243,604

ALIPHATIC METAL CLUSTER COMPOUNDS

Jan G. Noltes, Huis ter Heide; J. T. B. H. Jastrzebski, De Bilt, and Gerard van Koten, Bilthoven, all of Netherlands, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 7, 1979, Ser. No. 18,373

Int. Cl.[3] C07F *1/12*

U.S. Cl. 260—430 7 Claims

1. A process for the preparation of an aliphatic metal cluster compound of the formula $R_{x+y}AU_xLi_y$ where R is alkyl of 3–12 carbon atoms, x and y are each 1–4 and x+y is 2–8, comprising reacting an alkyllithium wherein the alkyl group contains 3–12 carbon atoms, with AU or AUMXL wherein, X is chlorine or bromine, and L is an organic ligand, in a hydrocarbon solvent.

7. An aliphatic metal cluster compound having the formula

$$R_{x+y}AU_xLi_y$$

where R is alkyl of 3–12 carbon atoms, x and y are each 1–4, and x+y is 2–8, and etherates thereof.

4,243,605

NOVEL ISOCYANATES

William A. Eisenhardt, Jr., Yorktown Heights; Eddie Hedaya, White Plains, and Spyros Theodoropulos, Yorktown Heights, all of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 687,149, May 17, 1976, Pat. No. 4,115,539. This application Jul. 3, 1978, Ser. No. 921,809

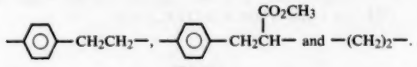
Int. Cl.[2] C07F *7/18*

U.S. Cl. 556—414 **4 Claims**

1. Isocyanates having the structural formaula:

$$(R)_3SiO—R'—N=C=O$$

wherein R is a member selected from the group consisting of lower alkyl, alicyclics, aryl, alkaryl and aralkyl, each having no more than about 10 carbon atoms and R' is a radical selected from the group consisting of



4,243,606

N-SUBSTITUTED ANILINES

Paul M. C. Bourdauducq, Franqueville St Pierre; Claude M. H. E. Brouard, St Pierre les Elbeuf; Claude L. E. Moerel, Bihorel, and Jean-Pierre H. Stiot, St Pierre les Elbeuf, all of France, assignors to Produits Chimiques Ugine Kuhlmann, Courbevoie, France

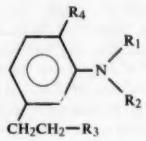
Filed Sep. 30, 1977, Ser. No. 838,438

Claims priority, application France, Oct. 12, 1976, 76 30578

Int. Cl.[3] C07C *101/447, 103/28, 121/78*

U.S. Cl. 260—465 D **10 Claims**

1. A compound of the formula:



in which R_1 and R_2 each represents unsubstituted alkyl containing 1 to 4 carbon atoms or alkyl containing 1 to 4 carbon atoms monosubstituted by halogen, hydroxy, alkoxy containing 1 to 4 carbon atoms, acetoxy, propionyloxy, carbomethoxy or carbethoxy;

R_3 is cyano, carbamoyl, carboxy or carbalkoxy containing 2 to 5 carbon atoms; and

R_4 is hydrogen, halogen, alkyl containing 1 to 4 carbon atoms or alkoxy containing 1 to 4 carbon atoms.

4,243,607

PROCESS FOR THE PREPARATION OF TETRACHLOROALKANES

Minoru Takamizawa; Haruo Okamoto; Mitsuo Umemura, and Kazuo Kooya, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Filed Nov. 5, 1976, Ser. No. 739,049

Claims priority, application Japan, Nov. 10, 1975, 50/134902

Int. Cl.[3] C07C *17/28*

U.S. Cl. 570—257 **11 Claims**

1. A process for the preparation of a tetrachloroalkane having more than two carbon atoms which comprises reacting an ethylenic hydrocarbon with carbon tetrachloride in the presence of a catalytically effective amount of a mixture composed of an alkyl phosphite, an iron chloride and a nitrile compound.

4,243,608

3-(4-HYDROXYPHENYL)PENTANEDIOIC ACID, MONOHYDRAZIDE, DERIVATIVES AND ANALOGS

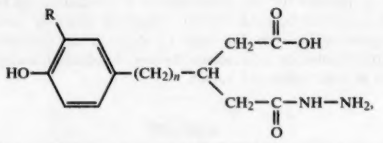
Ravi K. Varma, Belle Mead, N.J., and B. Richard Vogt, Yardley, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 14, 1979, Ser. No. 38,593

Int. Cl.[2] C07C *109/10, 101/00*; C07J *1/00*

U.S. Cl. 260—501.11 **4 Claims**

1. A compound having the formula



or an acid addition salt thereof, wherein R is hydrogen or alkyl of 1 to 3 carbon atoms and n is 0,1,2,3, or 4.

4,243,609

RING-FLUORINATED 4-(HEXADECYL-AMINO) N-SUBSTITUTED BENZAMIDE COMPOUNDS

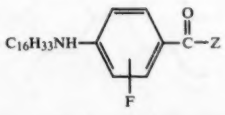
Robert G. Shepherd, South Nyack, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 2, 1978, Ser. No. 874,433

Int. Cl.[3] C07C *101/58, 127/15, 157/19, 143/83*

U.S. Cl. 564—91 **2 Claims**

1. A compound selected from the group of the formula:



wherein $C_{16}H_{33}$ represents unbranched or branched hexadecyl and Z is selected from the group consisting of loweralkanesulfonylamino, phenylsulfonylamino, loweralkanoylamino, benzoylamino and carboxyalkylamino; and the pharmacologically acceptable acid-addition and cationic salts thereof.

4,243,610

COBALT-GOLD PROMOTER FOR RUTHENIUM HYDROGENATION CATALYST AS IN HYDROGENATION OF UNSATURATED DINITRILES

Charles A. Drake, and Timothy P. Murtha, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 960,798, Nov. 14, 1978, Pat. No. 4,215,019. This application Nov. 8, 1979, Ser. No. 92,778

Int. Cl.[3] C07C *85/12*

U.S. Cl. 564—491 **15 Claims**

1. A method for the hydrogenation of a compound which comprises subjecting said compound to hydrogenation conditions in the presence of a catalyst comprising ruthenium, cobalt and gold.

4,243,611

2-DECARBOXY-2-HYDROXYMETHYL-19,20-DIDEHYDRO PG_2 COMPOUNDS

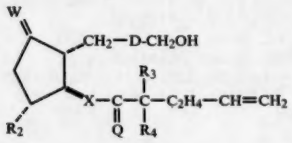
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Apr. 2, 1979, Ser. No. 26,066

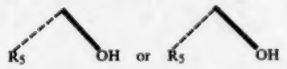
Int. Cl.[3] C07C *177/00*

U.S. Cl. 568—379 **172 Claims**

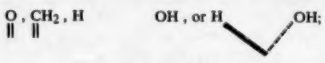
1. A compound of the formula



wherein D is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—CH_2—CH_2—, or
(4) trans—$(CH_2)_3$—CH=CH—
wherein g is zero, one, two, or three;
wherein Q is



wherein R_5 is hydrogen or methyl,
wherein W is



wherein X is cis- or trans—CH=CH— or —C≡C—;
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl
wherein R_3 and R_4 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that of one R_3 and R_4 is fluoro only when the other is hydrogen or fluoro.

4,243,612

BENZYLIC OXIDATION PROCESS

Peter E. Throckmorton, Plain City; Gary E. Sitz, Marysville, and Robert A. Grimm, Upper Arlington, all of Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Aug. 13, 1979, Ser. No. 66,196
Int. Cl.³ C07C *45/36*
U.S. Cl. 568—431 **5 Claims**

1. In a catalytic vapor phase process for the oxidation of toluene by reaction with molecular oxygen in the presence of a heterogeneous catalyst system of uranium and molybdenum oxides to effect conversion thereof to benzaldehyde; the improvement wherein said catalyst system has the gram-atom empirical formula:

$$U_{27}Mo_{2\text{-}27}M^1_{0.2\text{-}10}M^2_{0\text{-}3}O_x$$

in which M^1 is lead, tin, zirconium, cadmium, antimony or nickel; M^2 is sodium or potassium and x represents the amount of oxygen bound to the other elements in their respective states of oxidation in the catalyst system.

4,243,613

PROCESS FOR THE MANUFACTURE OF MIXTURES OF FORMALDEHYDE AND METHANOL BY PARTIAL OXIDATION OF METHANE

Rudolf Brockhaus, Marl, and Hans-Jürgen Franke, Dorsten, both of Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 25, 1978, Ser. No. 945,397
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1977, 2743113
Int. Cl.³ C07C *47/48, 27/14*
U.S. Cl. 568—482 **10 Claims**

1. In a continuous process for the partial oxidation of methane to formaldehyde and methanol using oxygen or oxygen containing oxidizing gases, by allowing methane or a methane/inert gas mixture and oxidizing gas to flow together in a combustion tube under a pressure of more than 5 bars after the methane or the methane/inert gas mixture has been heated separately to 300° to 600° C., reacting the gas mixture resulting from the combination of said gases in a reaction zone of said combustion tube in the form of a flame by self-ignition at 300° to 600° C. to produce methanol and formaldehyde, cooling the reaction mixture and separating the resulting products, the improvement which comprises feeding the oxidizing gas concentrically into a stream of methane or a methane/inert gas mixture, the velocity of which, measured in the cylindrical section of the combustion tube, is 1 to 15 m. $second^{-1}$, the velocity of the oxidizing gas being 50 to 300 m. $second^{-1}$ higher than that of the methane or methane/inert gas mixture and the volume of the stream of methane gas being 3 to 100 times greater than that of the stream of oxidizing gas, said inert gas being a gas inert under the reaction conditions.

4,243,614

PROCESS FOR PRODUCING HEXANITROSTILBENE

Everett E. Gilbert, Morristown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 23, 1979, Ser. No. 69,216
Int. Cl.³ C07C *79/10*
U.S. Cl. 568—931 **10 Claims**

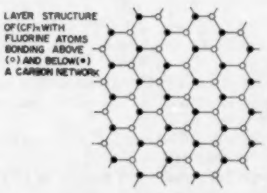
1. A process for producing 2,2',4,4',6,6'-hexanitrostilbene, which comprises reacting 2,2',4,4',6,6'-hexanitrobibenzyl with copper sulfate in a solvent consisting essentially of hexamethylphosphoric triamide.

4,243,615

PROCESS FOR PREPARING POLY-DICARBON MONOFLUORIDE

Nobuatsu Watanabe, No. 136, Uguisu-dai, Nagaokakyo-shi, Kyoto, Japan, and Yasushi Kita, Hiroshima, Japan, assignors to Watanabe Applied Science Research Institute and Nobuatsu Watanabe, both of Kyoto, Japan

Continuation of Ser. No. 941,668, Sep. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 824,911, Aug. 15, 1977, Pat. No. 4,139,474. This application Jun. 29, 1979, Ser. No. 53,212
Claims priority, application Japan, Feb. 22, 1977, 52-017823
Int. Cl.³ C07C *19/08*
U.S. Cl. 570—150 **16 Claims**



1. A process for preparing a chemical compound polydicarbon monofluoride represented by the formula

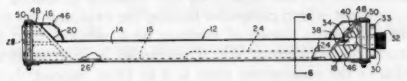
$$(C_2F)_n$$

and having a crystalline structure in which a layer structure is stacked with an interlayer spacing of about 9.0 Å to form a packing structure, said crystalline structure exhibiting a peak at about 10° in terms of an angle of 2θ in the X-ray diffraction powder pattern, comprising reacting a particulate carbon material having Franklin's P-value of about 0 to about 0.6 with fluorine at a temperature of 300° to 500° C. until complete fluorination of the particulate carbon material is accomplished.

4,243,616
AIR DIFFUSER

Ronald Wyss, R.R. 1, Box 1, Ada, Ohio 45810

Filed Feb. 15, 1979, Ser. No. 12,317
Int. Cl.[3] B01F *3/04*
U.S. Cl. 261—122 19 Claims

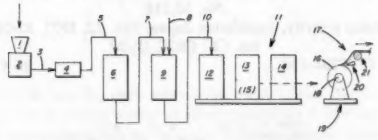


1. Diffuser apparatus comprising a frame including end portions interconnected by and integrated with an elongate intermediate portion, said frame being adapted to mount a diffuser sleeve, said intermediate portion of said frame being reduced as to its cross sectional area as compared to that of said end portions so that in application of a sleeve to said frame it will define therewith a diffuser chamber, one of said end portions having an inlet passage for directing air under pressure to the diffuser chamber, the discharge end of which inlet passage is bridged by means forming a plurality of discharge openings which in the operative function of said apparatus are continuously open and arranged to produce a discharge therefrom of the air under pressure in a plurality of jet-like streams, the most adjacent ends of said end portions of said frame including facing surfaces one of which embodies the discharge extremities of said plurality of discharge openings and is oriented to incline to and outwardly from said intermediate portion of said frame and away from the facing surface of the remote end portion of said frame.

4,243,617
FLEXIBLE FOAM REBONDING PROCESS AND APPARATUS

Russell W. Burge, Covina, Calif., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1979, Ser. No. 95,134
Int. Cl.[3] B29D *27/00*; B29C *29/00*
U.S. Cl. 264—39 60 Claims



1. A process for the production of rebonded foam comprising

(A) filling a mold at a first station with a mixture of foam particles and binder and thereafter precompressing said mixture in said mold,

(B) transporting a filled mold to a second station,

(C) at said second station,

(i) passing gas through the bottom of said filled mold in order to fluff the mixture,

(ii) compressing the fluffed mixture, and

(iii) curing said binder while said mixture is in the compressed state, thereby forming a cured product,

(D) transporting a mold containing cured product to a third station,

(E) at said third station,

(i) lifting said mold away from the cured product,

(ii) removing said cured product from under said mold, and

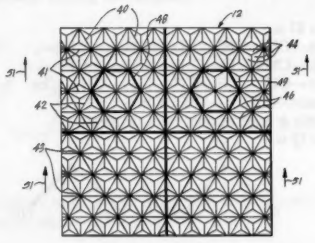
(iii) lowering the empty mold, and

(F) transporting said empty mold to said first station, wherein the operation of steps (A), (C) and (E) occurs substantially simultaneously, and wherein the transporting steps of (B), (D), and (F) occur simultaneously.

4,243,618
METHOD FOR FORMING RETROREFLECTIVE SHEETING

Donald E. Van Arnam, Ontario, Calif., assignor to Avery International Corporation, San Marino, Calif.

Filed Oct. 23, 1978, Ser. No. 953,555
Int. Cl.[2] B29D *11/00*; B29C *1/02*
U.S. Cl. 264—1 18 Claims



13. A method for forming retroreflective sheeting having a plurality of retroreflective cube-corner trigonal prisms distributed over one of its surfaces, the prisms disposed in a planar array having a plurality of zones of prisms having differing angular orientation, comprising the steps of:

a. forming at least one bundle of pins by clamping pins together along their longitudinal axes, said pins each having a top surface, such top surfaces combining to form a substantially planar surface on the bundle of pins;

b. inscribing on said planar surface a continuous pattern of cube-corner trigonal pyramids;

c. releasing the bundle of pins for allowing removal and rotation of the pins;

d. rotating the pins within the bundle about their longitudinal axes for providing differing angular orientation of the pyramid pattern;

e. rebundling the pins by reclamping the rotated pins together;

f. forming at least one mold from the disoriented pattern of cube-corner trigonal pyramids on the bundle of pins;

g. forming from said mold retroreflective sheeting having a plurality of retroreflective cube-corner trigonal prisms disposed in a planar array having a plurality of zones of prisms having differing angular orientations.

4,243,619
PROCESS FOR MAKING FILM FROM LOW DENSITY ETHYLENE HYDROCARBON COPOLYMER

William A. Fraser, Princeton, and Gary S. Cieloszyk, Somerville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 892,324, Mar. 31, 1978, abandoned. This application Feb. 16, 1979, Ser. No. 12,795
Int. Cl.[3] B29D *7/04, 7/22*
U.S. Cl. 264—40.6 25 Claims

1. A process for forming blown tubular film essentially free of melt fracture from an extrudate formed from molten ethylene hydrocarbon copolymer,

said copolymer having been made from ≧90 mol percent of ethylene and ≦10 mol percent of at least one C_3 to C_8 alpha olefin monomer with a transition metal based catalyst and having a narrow molecular weight distribution and a melt index of about ≧0.1 to about ≦5.0 and being susceptible to melt fracture in blown tubular film form when extruded into such form through an extrusion die having a die gap of 15 to ≦45 mils, which comprises extruding said copolymer into such form through an extrusion die having a die gap of greater than about 50 mils and at a drawdown ratio of greater than about 2 to less than about 250.

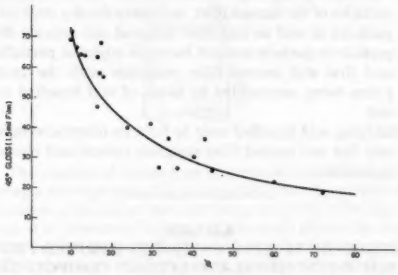
25. A process as in claim 1 wherein the extruded copolymer is cooled to form a frost line providing improved optical properties in the film product according to the following relationships:

$$45° \text{ specular gloss} = 336.4\ \phi^{-0.664}$$

wherein

ϕ is a cooling rate parameter

$\phi = \tau\ (MI)^{0.29}[(Tm - Tc)/Tm]^{-1}$



Tc = resin crystallization temp. (K°)

Tm = compound temp. (K°)

MI = resin melt index (grams/10 min.)

τ = residence time of extrudate between the die and the frost line (sec.), and wherein

τ is calculated assuming, that to a first approximation, extrudate extension between the die and the frost line height is a constant strain rate deformation, wherein

$$\tau = \frac{FLH}{V_1 - V_0} \ln \frac{V_1}{V_0}$$

where

FLH = frost line height (cm.)

V_1 = linear nip roll velocity (cm/sec)

V_0 = average linear extrudate velocity at the die exit (cm/sec) and is calculated as

$$V_0 = Q/\rho m \pi DG$$

where

Q = extruder output rate (grams/sec)

ρm = melt density (grams/cm^3)

D = die diameter (cm) and

G = die gap (cm).

4,243,620

METHOD OF MANUFACTURING AN OBJECT IN PLASTICS MATERIAL AND OBJECT OBTAINED THEREBY

Ennio G. Curetti, Grand-Lancy, and Andre M. Collombin, Avully, both of Switzerland, assignors to Motosacoche S.A., Carouge, Switzerland

Continuation of Ser. No. 692,508, Jun. 3, 1976, abandoned. This application Jul. 7, 1978, Ser. No. 923,084

Claims priority, application Switzerland, Jun. 13, 1975, 7666/75

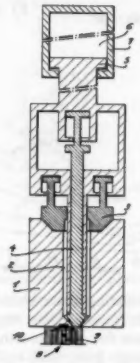
Int. Cl.[3] **B29C** *17/07*; **B29D** *23/02*; **B29F** *1/10*

U.S. Cl. 264—45.1 **11 Claims**

1. A method of producing an object made of plastic material in a mold in which the material is introduced into the space between a punch and a die surrounding said punch through the open end of said die, which can be connected to a device for the supply of plastic material under pressure, said punch and die comprising said mold, the method comprising the steps of:

(1) connecting a supply of hot plastic material, at a temperature higher than the temperature of the mold, with said open end whilst the front part of the punch is positioned in said open end, in order to close said open end to restrain the introduction of hot plastic material with low viscosity, into the empty space surrounding the punch within the die,

(2) progressively withdrawing the punch to progressively increase the flow section of the hot plastic material into the space between punch and die, whilst simultaneously progressively filling said space with plastic material of increased viscosity due to the cooling by the punch and die until the front part of the punch reaches a position of maximum distance from the open end with maximum flow section for the plastic material,



(3) subjecting the punch to a preset restraining action such that its longitudinal position is automatically balanced and it offers resistance to the flow of material in such a way as to control the introduction of material to achieve laminar flow, uniform filling, and symmetrical distribution of residual stresses,

(4) disconnecting the connection between said plastic material supply device and said open end, and then

(5) compressing the cooled-down plastic material contained in the space between punch and die, by progressively reducing the distance between the front part of the punch and the said open end of the mold.

4,243,621

β'-SIALON SINTERED BODY AND A METHOD FOR MANUFACTURING THE SAME

Masaaki Mori, Okazaki; Tamotu Ogawa, Kariya, and Norihira Takai, Yokohama, all of Japan, assignors to Toshiba Ceramics Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1978, Ser. No. 878,393

Claims priority, application Japan, Sep. 28, 1977, 52-116336; Sep. 28, 1977, 52-116337

Int. Cl.[3] **C04B** *35/44*

U.S. Cl. 264—65 **12 Claims**

1. A method for manufacturing a β'-sialon sintered material comprising the steps of

(a) adding 10 to 1,000 wt. parts of metal silicon powder to 100 wt. parts of mixed powder composed of 20 to 80 wt.% silica powder and 80 to 20 wt.% aluminum powder and thoroughly mixing said powders to obtain a powderous starting material;

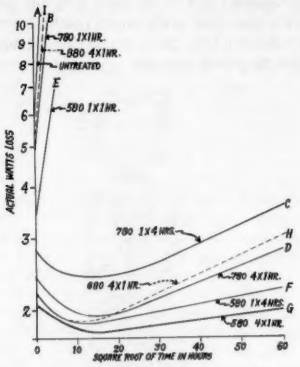
(b) molding said powderous starting material into a green compact, and,

(c) sintering said green compact in a nitrogenous non-oxidative gas atmosphere at a temperature of from about 1200° to about 1550° C. to form a β'-sialon sintered body.

4,243,622
METHOD FOR MANUFACTURING ZINC OXIDE VARISTORS HAVING REDUCED VOLTAGE DRIFT

James S. Kresge, Pittsfield, Mass., assignor to General Electric Company

Continuation of Ser. No. 836,765, Sep. 26, 1977, abandoned. This application Dec. 7, 1978, Ser. No. 967,196
Int. Cl.[3] C04B *33/30*
U.S. Cl. 264—66 7 Claims



1. A method for treating a zinc oxide varistor after sintering to reduce voltage drift comprising steps of:

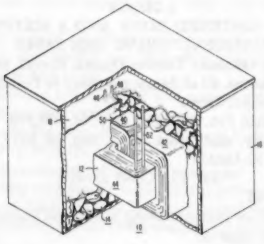
heating the varistor for not more than one cycle in air at a temperature range from 580° to 750° C. for a period of from two to six hours; and

cooling the varistor to room temperature at a rate of from 50° to 200° C. per hour.

4,243,623
METHOD OF ENCAPSULATING ELECTRICAL APPARATUS

Gerhard R. Sprengling, Derry Township, Westmoreland County, and Louis A. Cargnel, Unity Township, Westmoreland County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 870,896, Jan. 19, 1978, Pat. No. 4,164,619. This application Mar. 27, 1979, Ser. No. 24,341
Int. Cl.[3] B29C *6/02*
U.S. Cl. 264—69 6 Claims



1. A method of encapsulating an electrical apparatus comprising the steps of:

positioning said electrical apparatus in a case;

filling the space between said case and said electrical apparatus with a first particulate filler material, having a first predetermined particle size range, to a predetermined level in the case;

pouring a second particulate filler material, having a second predetermined particle size range, onto the first filler material, with the first and second predetermined particle size ranges being selected such that vibration of the case will cause substantially uniform dispersion of the second filler material in the first filler material, and with the particles of the second filler material each being coated with a dry "B" stage thermosetting resin;

vibrating said case until said second filler material is substantially evenly dispersed through said first filler material;

pouring a predetermined quantity of a liquid into said case, with said liquid being a solvent for the resin coating on the particles of the second filler, to liquefy the dry resin on the particles of said second filler material and provide direct particle-to-particle contact between adjacent particles of said first and second filler materials with the contact points being surrounded by beads of said liquefied resin; and

solidifying said liquefied resin to form an intersticial mass of said first and second filler materials around said electrical apparatus.

4,243,624
METHOD OF MAKING CATHODES DERIVED FROM AMMONIUM-METAL-CHALCOGEN COMPOUNDS

Allan J. Jacobson, Princeton; Russell R. Chianelli, Somerville, and M. Stanley Whittingham, Fanwood, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 933,451, Aug. 14, 1978, Pat. No. 4,166,160, which is a continuation-in-part of Ser. No. 883,919, Mar. 6, 1978, abandoned. This application May 21, 1979, Ser. No. 40,482
Int. Cl.[3] C04B *15/14*
U.S. Cl. 264—82 12 Claims

1. A method of making a cathode, comprising:

(a) forming cathode structure of a predetermined shape with a mixture comprising:

(i) about 50 to about 100% by weight of one or more ammonium metal chalcogen compounds and complexes, wherein said metal is selected from the group consisting of Ti, V, Cr, Mn, Fe, Nb, Mo, Ta, and W, and wherein said chalcogen is selected from the group consisting of O, S, and Se; and

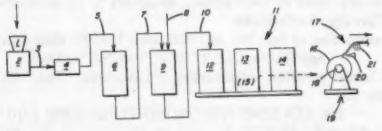
(ii) about 50 to about 0% by weight of a binder; and

(b) thermally decomposing and thereby activating said cathode structure at a temperature of about 200° to about 500° C. in a non-oxidizing atmosphere.

4,243,625
FLEXIBLE FOAM BONDING PROCESS

Russell W. Burge, Covina, Calif., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1979, Ser. No. 95,116
Int. Cl.[3] B29C *29/00*
U.S. Cl. 264—120 10 Claims



1. A process for bonding foam particles together comprising

(A) compressing a mixture of foam particles and binder in a mold,

(B) fluidizing the mixture after releasing compression,

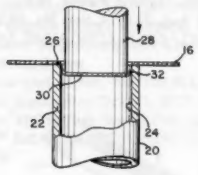
(C) recompressing the fluidized mixture in said mold and,

(D) curing the binder while said mixture is in the compressed state to bond said foam particles together.

4,243,626
METHOD OF MAKING ORNAMENTAL JEWELRY STONES

John E. Prete, 34 Tanglewood Dr., Cumberland, R.I. 02864

Filed May 21, 1979, Ser. No. 41,191
Int. Cl.[3] B29C *13/00, 21/00*
U.S. Cl. 264—153 11 Claims



1. The process of forming an ornamental article comprising forming a photographic film transparency having substantially transparent areas and at least one image thereon, reshaping said film so as to provide at least one substantially planar film image portion having an upwardly directed peripheral lip, depositing a sufficient amount of a first at least translucent plastic hardenable resin in a substantially fluid state on the upper surface of said thus formed film portion such that said resin covers said upper surface and said lip thereof retains said resin on said upper surface but permits a minor portion thereof to slump over said lip so as to form a peripheral bead having portions radially extending beyond said film portion lip, permitting said first resin to harden to thus form one segment of said article, and thereafter reversing said partially formed article such that the bottom surface of said film portion is uppermost and depositing a sufficient amount of a second at least translucent plastic hardenable resin in a substantially fluid state on said film portion bottom surface such that said second resin substantially covers said bottom surface and contacts at least a portion of said bead so as to essentially encapsulate said film portion and thereafter permitting said second resin to harden to thus form another segment of said article and so as to complete the formation of said article, said segments and said substantially transparent areas of said film portion visually merging so that only said image of said film portion is substantially observable in such completed article.

4,243,627
PROCESS FOR MANUFACTURING THERMOPLASTIC COMPOSITIONS AND CONTAINERS MADE OF SUCH COMPOSITIONS

Simon Kornbaum, Caluire, France, assignor to Ato Chimie, Courbevoie, France

Division of Ser. No. 844,310, Oct. 21, 1977. This application Jan. 31, 1979, Ser. No. 8,082
Claims priority, application France, Oct. 29, 1976, 76 32792
Int. Cl.[3] B29D *7/04*
U.S. Cl. 264—171 11 Claims

1. A process of manufacturing a sheet-like thermoplastic structure having a reduced permeability to gases comprising a continuous phase consisting essentially of polyvinyl chloride and a discontinuous phase consisting essentially of polyvinyl alcohol, incompatible with the polyvinyl chloride phase, comprising lamellar layers distributed in the continuous polyvinyl chloride phase parallel to the surface of said sheet-like structure, which comprises:

(a) mixing polyvinyl chloride with polyvinyl alcohol to provide a polymer mixture;

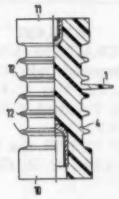
(b) gelling said mixture under the combined effects of pressure and heat, and

(c) extruding the gelled mixture by subjecting the gelled mixture to laminar flow through at least one die, said die providing between a die inlet and a die outlet a flow path for said mixture, at least a portion of which flow path is defined by the interval between two spaced parallel surfaces, the ratio of the length of said surfaces in the direction of flow to the distance between said surfaces being greater than 10.

4,243,628
METHOD FOR THE MANUFACTURE OF PLASTIC INSULATORS WITH SCREENS FOR INDOOR AND OUTDOOR USE

Georg Herold, Lichtenfels, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,307
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 2742042
Int. Cl.[3] B29F *1/10*
U.S. Cl. 264—275 11 Claims



1. A method for manufacturing plastic insulators with screens for indoor and outdoor use, comprising providing a first-fabricated screen part within a mold and injection-molding or transfer molding onto said part one or more injection-moldable, electrically high quality, hydrophobic, leakage-current-resistant, erosion and temperature resistant molding compounds having a high notch impact strength, said injection molding comprising plasticizing said molding compound under heat and injecting said compound into the mold under pressure, said molding compound comprising a thermosetting plastic, thermoplastic or elastomeric material comprising from 0 to 60% by weight thereof of filler materials.

4,243,629
METHOD AND APPARATUS FOR THE CONTINUOUS EXTRUSION AND BLOWING OF THIN FILMS OF PLASTIC MATERIAL IN PARTICULAR RIGID PVC

Giancarlo Tramezzani, Ponte Tresa, Switzerland, assignor to P.W.T. Plastic World Technology Limited, Triesen, Liechtenstein

Filed Mar. 13, 1979, Ser. No. 20,019
Claims priority, application Switzerland, Mar. 29, 1978, 3323/78; Jan. 19, 1979, 531/79
Int. Cl.[3] B29D *23/04*
U.S. Cl. 264—563 3 Claims

1. A method for the continuous extrusion and blowing of thin films of plastic material, comprising introducing the raw material into an extruder having a screw, precompressing the material continuously in the cold state in the screw, plasticizing the material by heating, leading the material through a throttling opening along a further portion of the screw, decompressing the material along a subsequent portion of the screw, degassing the material along still another portion of the screw, again increasing the pressure along a still further portion of the screw, and then extruding the material to a thin film.

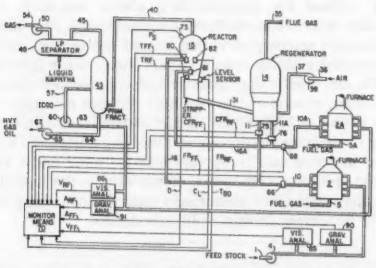
2. Apparatus for the continuous extrusion of thin films of plastic material, comprising an extrusion screw, means for feeding the raw material to the extrusion screw, the extrusion screw having, along its length, in the extrusion direction, a compression section in which the screw has a constant outer diameter and an increasing inner diameter and constant pitch, a homogenization zone in which the screw has constant inner and outer diameter and pitch, a plasticization zone in which the material is forced through at least one orifice, a decompression zone in which the screw has constant outer diameter and decreasing inner diameter and constant pitch, a degasification zone in which the screw has constant outer diameter and constant inner diameter and constant pitch with the inner diameter reduced in respect of the preceding diameters, a compression zone in which the screw has constant outer diameter and an increasing inner diameter and a constant pitch, and an expulsion zone from which the extruded material is expelled.

4,243,630

FLUID CATALYTIC CRACKING UNIT YIELD MONITOR

Howard C. Kliesch, Thousand Oaks, Calif.; Daniel N. McWilliams, Baton Rouge, La.; Roy E. Pratt, Groves, Tex., and Donald H. Schmude, Trumbull, Conn., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,651
Int. Cl.³ C10G *21/00*; G06G *7/58*
U.S. Cl. 422—62 **11 Claims**



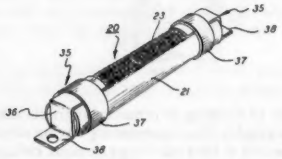
1. A yield monitor for a fluid catalytic cracking unit including furnaces preheating fresh feed, which is a gas oil, and recycle feed, which is recycle gas oil, a regenerator which regenerates and provides catalyst, a reactor receiving catalyst from the regenerator and the preheated fresh feed through a fresh feed riser and receiving catalyst from the regenerator and the preheated recycle feed through a recycle feed riser and providing the cracked feed to a fractionator which provides at least two product streams and which provides the recycle feed to one of the furnaces, comprising means for sensing the outlet temperature of the fresh feed riser, the outlet temperature of the recycle feed riser, the top pressure of the reactor, the flow rate of the catalyst being mixed with the fresh feed, the flow rate of the catalyst being mixed with the recycle feed, the catalyst's bed temperature, the level of the catalyst and the density of the catalyst, and the flow rates of the fresh feed and the recycle feed, and providing signals T_{FF}, T_{RF}, T_{BD}, P, CFR_{FF}, CFR_{RF}, C_L, D, FR_{FF}, FR_{RF}, respectively, corresponding thereto; means for analyzing the fresh feed and the recycle feed and providing signals A_{FF} and A_{RF} corresponding to the API gravity of the fresh feed and the recycle feed, respectively, and for providing signals V_{FF} and V_{RF} corresponding to the viscosity of the fresh feed and the recycle feed, respectively; K signal means connected to the analyzing means for providing a signal K corresponding to the Watson K factor of the fresh feed, the recycle feed and the catalyst in accordance with signal A_{FF}, A_{RF}, V_{FF}, V_{RF}, D and C_L; means connected to the sensing means, to the analyzer means and to the K signal means for providing signals corresponding to the yields of constituents of the product streams in accordance with signals T_{FF}, T_{RF}, T_{BD}, P, CFR_{FF}, CFR_{RF}, C_L, D, FR_{FF}, A_{FF}, A_{RF}, and K; and means connected to the yield signal means for displaying values of the yields of the constituents in accordance with the yield signals.

4,243,631

SOLID STATE SENSOR

John D. Ryerson, Holland Patent, N.Y., assignor to Energy for Independence, Inc., Holland Patent, N.Y.

Filed Aug. 3, 1979, Ser. No. 63,207
Int. Cl.³ G01N *27/04*; H01C *7/00*
U.S. Cl. 422—90 **19 Claims**



10. A detector for sensing the presence of ozone in an atmosphere including

a quartz substrate

granules of a lower valence oxide of a multi-valence metal oxide that is capable of sensing the presence of ozone in an atmosphere randomly fused to the quartz substrate and to each other to provide a rough textured sensing coating on said substrate, and

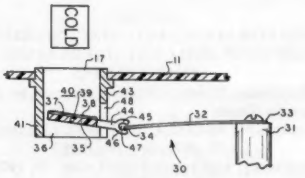
a pair of electrical connections in contact with the coating to permit a current to be passed therethrough.

4,243,632

CONTACT LENS DISINFECTOR WITH TEMPERATURE INDICATOR

Francis E. Ryder, Arab, Ala., assignor to Ryder International Corporation, Arab, Ala.

Filed Jun. 22, 1979, Ser. No. 51,121
Int. Cl.³ C01D *1/32*; C01F *1/00*; C01B *25/10*
U.S. Cl. 422—119 **10 Claims**



1. A disinfector unit for disinfecting contact lenses comprising: a housing; heating means arranged to heat the contact lenses to a disinfecting temperature; and temperature indicating means for indicating first and second temperature ranges with respect to a portion of said housing, said temperature indicating means comprising a prismatic lens means, first and second temperature indicia behind said prismatic lens means, and a pivotally mounted member carrying said prismatic lens means and said temperature indicia, said prismatic lens means being arranged for movement such that said first temperature indicia is viewable and the second temperature indicia is obscured when said prismatic lens means is at a first position, and said second temperature indicia is viewable and said first temperature indicia is obscured when said prismatic lens means is at a second position, and temperature responsive means for moving said pivotally mounted member and said prismatic lens

means between said first and second positions as a function of the temperature of said housing portion.

4,243,633

REACTOR FOR THE THERMAL CRACKING OF HEAVY OIL

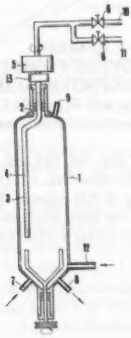
Hiroshi Hozuma; Hisatoshi Ohwada; Masaharu Tomizawa; Seiki Sanada, and Hideo Kikuchi, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo and Chiyooa Chemical Engineering and Construction Co., Ltd., Kanagawa, both of, Japan

Continuation-in-part of Ser. No. 733,911, Oct. 19, 1976, abandoned. This application Oct. 25, 1977, Ser. No. 845,303

Claims priority, application Japan, Oct. 22, 1975, 50-126276

Int. Cl.³ C10G *9/04, 9/12*

U.S. Cl. 422—129 **3 Claims**



1. In a reactor for the thermal cracking of a heavy oil raw material comprising means defining a cracking reactor and an injection pipe, the improvement comprising:

said injection pipe being inserted into said reactor through a top opening in said reactor, said injection pipe having two vertically extended portions offset from one another, one of said portions being located on the axis of said reactor and the other of said portions extending along an interior wall surface of said reactor at a closely spaced distance from said wall surface, said injection pipe being provided with a multitude of spouting jets longitudinally spaced along its length, each of said spouting jets being formed in the wall of said injection pipe at an angle of 25° to 90° with respect to the longitudinal axis of the injection pipe;

means for rotating said injection pipe within said reactor;

a first conduit for feeding an inert fluid to said injection pipe;

a second conduit for feeding the preheated raw material at a temperature of 300° to 350° C. to said injection pipe;

switching means for connecting said injection pipe to said first conduit during thermal cracking and to said second conduit for decoking subsequent to the thermal cracking; and

means for reciprocating movement of the injection pipe axially therein.

4,243,634

FLUID CATALYST REGENERATION APPARATUS

Anthony G. Vickers, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 969,607, Dec. 14, 1978. This application Nov. 5, 1979, Ser. No. 91,328

Int. Cl.³ F27B *15/08;* **B01J** *21/20, 29/38;* **C10G** *11/18*

U.S. Cl. 422—144 **6 Claims**

1. Apparatus for regenerating a coke-contaminated, fluid catalyst which apparatus comprises in combination:

(a) a vertically-oriented combustion chamber;

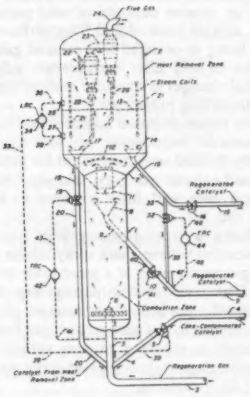
(b) a spent catalyst inlet conduit for gas and fluid catalyst connecting with the lower portion of said combustion chamber;

(c) fluid catalyst collecting means disposed within an upper portion of said combustion chamber;

(d) a first catalyst withdrawal conduit, connecting with said catalyst collecting means, for withdrawal of collected regenerated fluid catalyst from said combustion chamber;

(e) a heat removal chamber located superadjacent to said combustion chamber and in communication therewith;

(f) heat removal means disposed within said heat removal chamber;



(g) a second catalyst withdrawal conduit connected at one end to said heat removal chamber for withdrawing regenerated fluid catalyst from said heat removal chamber; and

(h) first mixing conduit means connected at one end to said second withdrawal conduit and at the other end to said first withdrawal conduit **2** said first mixing conduit means providing for the selective controlled mixing of regenerated fluid catalyst from said heat removal chamber with that removed from said combustion chamber in said first withdrawal conduit to permit the temperature of the mixture thereof to be selectively controlled within the desired ranges.

4,243,635

WASTE INCINERATOR EXHAUST GAS TREATMENT AND APPARATUS

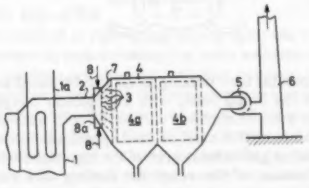
Hans Aeberli, Meggen, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland

Filed Feb. 3, 1978, Ser. No. 874,803

Claims priority, application Switzerland, Feb. 24, 1977, 2331/77

Int. Cl.³ B01J *8/00;* **B03C** *3/01;* **C01B** *7/00;* **F01N** *3/08*

U.S. Cl. 422—176 **4 Claims**



1. A waste incinerator comprising:

means defining a combustion chamber;

means defining an exhaust gas passageway in communication with said combustion chamber and having a flow therethrough away from said combustion chamber of exhaust gases generated by combustion in said combustion chamber;

filter means disposed in said exhaust gas passageway for separating particulate material from said exhaust gas flow, said filter means having an input side and an output side, said output side having a gas pressure lower than the gas pressure of said input side;

filter elements disposed within said filter means and having filter surfaces formed thereon, said filter surfaces being adapted to receive deposits of said particulate material thereon, at least some of said filter surfaces being nonplanar and being so oriented that exhaust gases passing over said some of said filter surfaces are subject to sudden directional changes in a regular manner resulting in turbulence intensifying pulsations;

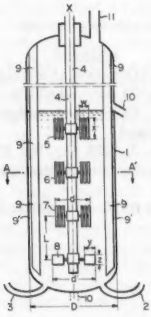
spray nozzle means disposed adjacent said input side of said filter means for introducing into said exhaust gas flow a dry, finely divided scrubbing agent for removing constituents of said exhaust gas flow, said scrubbing agent being distributed onto said filter surfaces to form a coating thereon; and

means defining a second passageway providing gaseous communication between said spray nozzle means and said exhaust gas passageway at a point prior to said input side of said filter, said second passageway defining means branching off a portion of said exhaust gas flow and conducting said portion of said exhaust gas flow to said spray nozzle means to supply a gaseous vehicle for propelling said scrubbing agent through said spray nozzle means and onto said filter surfaces.

4,243,636
APPARATUS FOR THE CONTINUOUS LIQUID-PHASE CATALYTIC OXIDATION OF ALKYL-SUBSTITUTED AROMATIC COMPOUNDS

Shigemi Shiraki, Iwakuni, and Ryoichi Yamamoto, Yamaguchi, both of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,914
Claims priority, application Japan, Feb. 15, 1978, 53/15335
Int. Cl.³ B01F *7/16;* **B01J** *19/18;* **C07C** *51/16*
U.S. Cl. 422—225 **11 Claims**

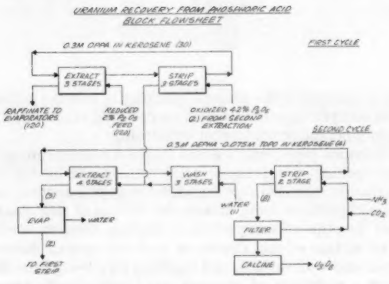


1. In an apparatus for oxidizing an alkyl-substituted aromatic compound in the liquid phase with a molecular oxygen-containing gas in a lower aliphatic carboxylic acid solvent in the presence of an oxidation catalyst, said apparatus comprising a reaction vessel, a gas exhaust port at the top of the vessel, an inlet at the bottom of the vessel for feeding said molecular oxygen-containing gas, an inlet for feeding said solvent, an inlet for feeding said catalyst, an inlet for feeding said alkyl-substituted aromatic compound, an outlet for withdrawing the oxidation reaction product, and an agitator within the vessel, said agitator consisting of a rotating shaft provided along the axial direction of the vessel and a plurality of stages of agitating blades secured to said rotating shaft at spaced intervals; the improvement wherein at least one stage of the agitating blades consists of comb-like flat blades each of which is composed of a plurality of comb-like pieces aligned at spaced intervals; wherein the total area of said plurality of comb tooth-like pieces is about 0.83 to about 3 times the total area of the spaces among said comb tooth-like pieces in each comb-like flat blade when taken on a flat plane.

4,243,637
URANIUM RECOVERY FROM PRE-TREATED PHOSPHORIC ACID

James L. Bradford, Brea, and Fernando Ore, Whittier, both of Calif., assignors to Occidental Petroleum Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 688,265, May 20, 1976, Pat. No. 4,053,564. This application Oct. 11, 1977, Ser. No. 840,791
The portion of the term of this patent subsequent to Oct. 11, 1994, has been disclaimed.
Int. Cl.² C01G *43/00, 43/02*
U.S. Cl. 423—10 **16 Claims**



1. A process for recovering uranium values from phosphoric acid which comprises:

(a) contacting an aqueous phosphoric acid phase containing uranium values, from 1% to about 55% P_2O_5 values by weight and impurities with a first water immiscible organic extractant phase comprising a water immiscible organic solvent containing at least one water immiscible organic sulfonic acid dissolved therein to form:

(i) a pretreated phosphoric acid phase containing uranium values; and

(ii) a loaded organic extractant phase containing impurities;

(b) separating the pretreated aqueous phosphoric acid phase from the loaded organic extractant phase;

(c) contacting pretreated aqueous phosphoric acid phase with a second water immiscible organic extractant phase comprising a water immiscible organic solvent containing at least one water immiscible organophosphorus uranium-extracting agent dissolved therein to form:

(i) a uranium-depleted phosphoric acid phase; and

(ii) an organic extractant phase containing uranium values;

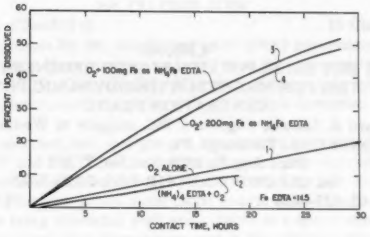
(d) separating the uranium-containing organic extractant phase from the uranium-depleted phosphoric acid phase; and

(e) recovering uranium values from the uranium-containing second organic extractant phase.

4,243,638
IRON EDTA CHELATE CATALYZED OXIDATION OF URANIUM

John F. Jackovitz, Monroeville; Armand J. Panson, Pittsburgh, and Earl A. Pantier, Verona, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 15, 1978, Ser. No. 915,648
Int. Cl.[2] C06G *43/00*; E21B *43/28*
U.S. Cl. 423—17 12 Claims



1. In the process of leaching and recovering of uranium from ore in which the uranium is the present in the tetravalent state, the steps comprising:

(a) applying to the ore an aqueous leach solution comprising essentially from about 0.3 to 5 grams per liter of ammonium bicarbonate, from about 0.1 to 3 grams per liter of H_2O_2 and ferric ammonium EDTA wherein the EDTA:Fe ratio is at least about 1.25:1, the ferric ammonium EDTA providing from 3 to 100 ppm of iron in the solution, the pH of the solution being about 7.4 to 9.5, the leach solution converting tetravalent uranium with which it comes in contact to the hexavalent state which then readily dissolves in the solution,

(b) withdrawing from the ore leach solution enriched in uranium, and

(c) stripping the uranium from the withdrawn uranium enriched solution.

4,243,639
METHOD FOR RECOVERING VANADIUM FROM PETROLEUM COKE

Frank C. Haas, Arvada, and William K. Hesse, Boulder, both of Colo., assignors to Tosco Corporation, Los Angeles, Calif.

Filed May 10, 1979, Ser. No. 37,493
Int. Cl.[3] C01G *31/00*
U.S. Cl. 423—63 11 Claims

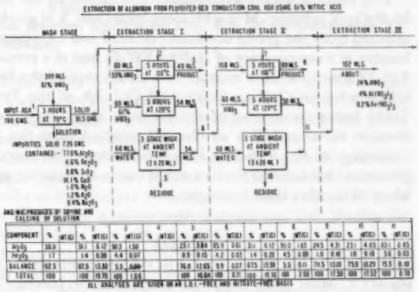
1. A method for recovering at least about 70 weight % of the vanadium contained in petroleum coke which comprises:

heating a mixture of petroleum coke containing inorganic compounds including vanadium and an alkali metal salt gasification catalyst in the presence of steam at a sufficient temperature to gasify the carbon in the coke with said steam and produce a combustible gas and inorganic ash composed predominantly of said inorganic compounds and a water soluble alkali metal vanadate, adding said inorganic ash to water to dissolve said water soluble alkali metal vanadate and recovering said dissolved vanadate from said water.

4,243,640
PROCESS OF EXTRACTION OF ALUMINUM VALUES FROM COAL ASH

Robert O. Hill, 24, Torwood Rd., Forest Town, Johannesburg, South Africa, and Bernard Raistrick, 24 Wheatlands Rd. East, Harrogate, Yorkshire, England (HG2 8PX)

Filed May 23, 1978, Ser. No. 908,862
Int. Cl.[3] C01F *7/66*
U.S. Cl. 423—132 10 Claims



1. A process for preparing a solution of high aluminum content from the combustion residue of a solid carbon-containing fuel obtained by a combustion procedure wherein said residue is formed at a temperature substantially above about 800° C. and wherein said residue has a carbon content of 2% or less by weight and an iron content calculated as Fe_2O_3 of 4% or less by weight which comprises:

(a) pretreating said residue with an amount of nitric acid substantially equivalent to about 100 to 300% of that required to dissolve all the Al_2O_3 present in the combustion residue for a time to effect substantial dissolution of calcium, magnesium, sodium, potassium and titanium impurities and to leave aluminum substantially undissolved, separating the residual, and then

(b) extracting said treated residue with nitric acid of strength about 30% to 65% by weight strength at about 100° to 225° and in a quantity equivalent to 300 to 600% of the amount of nitric acid solution necessary to dissolve the aluminum cations taken up from the residue during extraction, said temperature being higher than that employed in the pretreatment step.

4,243,641
METHOD FOR RECOVERING LITHIUM FROM SEA WATER

Tomitaro Ishimori, Sekimachi, and Kaoru Ueno, Katsuta, both of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Sep. 22, 1978, Ser. No. 944,696
Claims priority, application Japan, Nov. 7, 1977, 52/132441
Int. Cl.[3] C22B *26/12*
U.S. Cl. 423—179.5 3 Claims

1. A method of recovering lithium from sea water comprising repeatedly concentrating sea water and removing from the brine concentrates the salts including common salt which are separated as a result of the concentration to produce a brine which has a specific gravity of about 1.4 when measured at a temperature of from 23° to 27° C., diluting said brine of about 1.4 specific gravity with water, thereafter passing the diluted brine through an ion exchange resin to accumulate lithium and magnesium ions on the resin, and treating said resin having lithium and magnesium ions thereon with an aqueous hydrochloric acid solution to elute lithium from said resin while magnesium ions remain on said resin.

4,243,642

METHOD FOR THE SYNTHESIS OF BORACITES

Michaelangelo Delfino, Spring Valley; Philip S. Gentile, Mt. Vernon, both of N.Y.; Gabriel M. Loiacono, Franklin Lakes, N.J., and Wallace A. Smith, Ossining, N.Y., assignors to North American Philips Corporation, New York, N.Y.

Filed May 23, 1979, Ser. No. 42,254

Int. Cl.[3] C01B *35/00*

U.S. Cl. 423—277 4 Claims

1. A method for the production of boracites of the formula $M_3B_7O_{13}X$ wherein M is a bivalent metal and X is an element selected from the group consisting of Br, I and Cl, comprising heating at a temperature of 200° to 300° C. and at a pressure of 5 to 33 atmospheres, a mixture of a compound of the formula GBO_2 wherein G is an element of Col. 1A of the Periodic Table and a compound of the formula MX_2 where M is a bivalent metal and X is an element selected from the group consisting of Br, I and Cl in an inert atmosphere with the provision that the reaction is carried out in an agueous solvent when G is other than hydrogen.

4,243,643

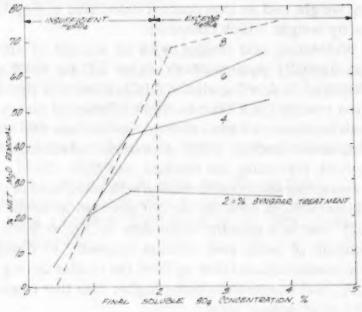
METALLIC ION REMOVAL FROM PHOSPHORIC ACID

Harold E. Mills, Lake City, Fla., assignor to Occidental Chemical Company, Houston, Tex.

Continuation-in-part of Ser. No. 810,484, Jun. 27, 1977, Pat. No. 4,136,199. This application Oct. 25, 1978, Ser. No. 954,647

Int. Cl.[2] C01B *25/18*

U.S. Cl. 423—319 48 Claims



1. A process for the removal of at least one metallic ion impurity from impure phosphoric acid comprising the steps of:
(a) adding to the impure phosphoric acid a solid precipitant comprising calcium and fluorine and having a dry basis analysis of at least 20% by weight calcium oxide and at least 19% by weight F, said precipitant prepared by treatment of wet process phosphoric acid plant pond water with a calcium containing compound;
(b) allowing the formation of a precipitate containing the impurity to yield a purified phosphoric acid; and
(c) separating at least a portion of the precipitate from the purified phosphoric acid.

4,243,644

PROCESS TO SYNTHESIZE AMMONIA

Herbert R. Lukens, Jr., La Jolla; Donald P. Snowden, and Richard L. Voigt, both of San Diego, all of Calif., assignors to IRT Corporation, San Diego, Calif.

Filed Jun. 13, 1979, Ser. No. 48,224

Int. Cl.[3] C01C *1/00*

U.S. Cl. 423—352 8 Claims

1. A process for synthesizing ammonia comprising:
(a) making a mixture of carbon and magnesium metal,
(b) forming a melt of said mixture by heating said mixture above the melting point of magnesium metal in an atmosphere substantially free of nitrogen,
(c) cooling said melt to solidify same,
(d) exposing said solidified melt to moist air to form ammonia, and
(e) recovering the ammonia thereby produced.

4,243,645

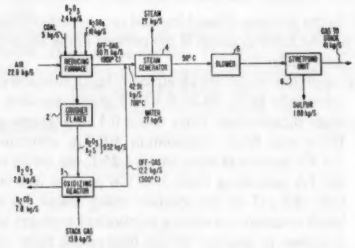
ALL DRY SOLID POTASSIUM SEED REGENERATION SYSTEM FOR MAGNETOHYDRODYNAMIC POWER GENERATION PLANT

Edward J. Lahoda, Edgewood, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 21, 1979, Ser. No. 77,802

Int. Cl.[3] C01D *7/00*; C01B *7/00*; G21D *7/02*

U.S. Cl. 423—428 10 Claims



1. A process for converting K_2SO_4 into K_2CO_3 comprising:
(A) reacting said K_2SO_4 with a reducing agent in the presence of 0.1% to about 40% B_2O_3 at about 800° to about 1300° C. for at least about one hour to produce K_2S;
(B) reacting said K_2S with carbon dioxide and steam at about 450° to about 750° C. for at least about one hour to produce hydrogen sulfide and said K_2CO_3; and,
(C) separating said K_2CO_3 and said hydrogen sulfide.

4,243,646

TREATMENT OF CARBON FIBRE

David J. Lind, Breadsall; Valerie J. Coffey, Long Eaton, and Joyce Hallam, Milford, all of England, assignors to Rolls-Royce Limited, London, England

Filed Aug. 29, 1978, Ser. No. 948,293

Claims priority, application United Kingdom, Oct. 4, 1977, 41140/77

Int. Cl.[3] D01F *9/12*

U.S. Cl. 423—447.1 2 Claims

1. A method of treating carbon fibre to enhance the strength thereof when incorporated in a resin matrix, said method consisting essentially of:
(1) subjecting the fibre to a surface removal step in which the surface layer of the fibre is removed together with any flaws therein, and subsequently
(2) subjecting the fibre to a surface deactivation step in which at least some of the functional groups on the surface of said fibre are either removed or rendered incapable of forming a chemical bond with the resin matrix material by heating said fibre in an inert atmosphere of nitrogen.

4,243,647
PROCESS FOR REMOVAL OF HYDROGEN SULFIDE FROM GAS STREAMS

Robert H. Hass, Fullerton, and Rowland C. Hansford, Yorba Linda, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 602,416, Aug. 6, 1975, abandoned, which is a continuation-in-part of Ser. No. 528,845, Dec. 2, 1974, abandoned. This application Jun. 28, 1976, Ser. No. 700,513

Int. Cl.³ C01B *17/04*

U.S. Cl. 423—573 G **11 Claims**

1. A process for the desulfurization of a feed gas containing at least one sulfur component selected from the class consisting of SO_2, COS, CS_2, CH_3SH, SO_3, and sulfur vapor, which process, being carried out for at least 30 days, comprises the steps of:

(1) contacting said feed gas at a temperature between about 300° and 800° F. with a hydrofining catalyst comprising a combination of a Group VIB metal oxide and/or sulfide with an iron group metal oxide and/or sulfide, said feed gas being contacted with said catalyst at a space velocity correlated with temperature, and in the presence of sufficient of one or more components selected from the class consisting of water vapor, H_2, and CO, so as to convert at least about 80% of said sulfur components to H_2S by hydrolysis and/or hydrogenation;

(2) dehydrating the resulting hydrofined gas to a water vapor content of less than about 15 volume percent;

(3) contacting, at a temperature between about 250° and 450° F., a mixture of said dehydrated hydrofined gas and a gaseous oxidant comprising sufficient elemental oxygen to oxidize at least 80% of said H_2S to sulfur with a catalyst comprising a vanadium oxide and/or sulfide supported on a non-alkaline porous refractory oxide, said contacting being carried out at a space velocity correlated with temperature so as to oxidize at least 80% of the H_2S contained in said dehydrated hydrofined gas to elemental sulfur vapor, with said catalyst maintaining substantially undiminished activity for oxidizing H_2S to sulfur under essentially the same conditions for at least 30 days of contacting; and

(4) separating free sulfur from the resulting gaseous effluent, and recovering a purified product gas.

4,243,648
METHOD FOR REMOVING HYDROGEN SULFIDE FROM GAS STREAMS

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Jun. 20, 1979, Ser. No. 50,170

Int. Cl.³ C01B *17/04*

U.S. Cl. 423—573 R **20 Claims**

1. A method for removing hydrogen sulfide from a hydrogen sulfide-containing gas stream and converting said hydrogen sulfide to elemental sulfur, which comprises:

(a) contacting said gas stream with an aqueous regenerable washing solution capable of converting absorbed hydrogen sulfide to hydrophobic sulfur particles, said contacting being conducted under conditions selected to absorb said hydrogen sulfide into said washing solution and to convert the absorbed hydrogen sulfide substantially exclusively to hydrophobic elemental sulfur particles;

(b) allowing said absorbed hydrogen sulfide to react with the constituents of said washing solution to thereby form said sulfur particles;

(c) oxidatively regenerating the washing solution from step (b) to form a regenerated washing solution;

(d) transferring said hydrophobic sulfur particles from said washing solution to a nonaqueous carrier liquid so as to form a substantially nonaqueous sulfur slurry comprised of said sulfur particles entrained in said carrier liquid; and

(e) heating said sulfur slurry so as to melt said sulfur particles and thereby form a liquid elemental sulfur product.

4,243,649
PROCESS FOR THE MANUFACTURE OF ZIRCONIUM OXIDE FROM TECHNICAL CALCIUM ZIRCONATE

Wilhelm Brugger, Ratingen, Fed. Rep. of Germany, assignor to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Nov. 21, 1979, Ser. No. 96,424

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1978, 2854200

Int. Cl.³ C01G *25/02*

U.S. Cl. 423—608 **5 Claims**

1. A method for the manufacture of zirconium oxide suitable for the manufacture of electro-ceramics from technical grade calcium zirconate comprising

(a) dissolving the calcium zirconate in hydrochloric acid, adjusting the fluorine content of the solution to 0.1 to 0.15 moles of fluorine per mole of zirconium by the addition of an alkali or an alkaline earth fluoride and then freeing the solution from insoluble components;

(b) mixing the solution with 0.6 to 0.75 moles of sulfuric acid per mole of zirconium and heating it to temperatures of ≧80° C. and maintaining this temperature for at least 10 minutes;

(c) diluting the suspension obtained with approximately an equal volume of water, allowing the suspension to stand at least 2 hours, and filtering and washing the precipitate;

(d) mixing the precipitate with an ammonium carbonate solution which contains at least equimolar amounts of ammonium carbonate based on the zirconium;

(e) passing carbon dioxide into this suspension at 20° to 30° C. for at least 30 minutes and filtering, washing and drying the precipitate; and

(f) calcining the dried precipitate at 1,000° to 1,100° C.

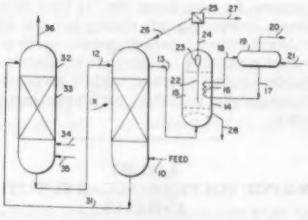
4,243,650
HEAT AND VOLATIZED SALT RECOVERY FROM REACTION EFFLUENT

Utah Tsao, Jersey City, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Continuation-in-part of Ser. No. 870,351, Jan. 18, 1978, abandoned, and Ser. No. 25,278, Mar. 29, 1979, abandoned. This application Jun. 13, 1979, Ser. No. 48,147

Int. Cl.³ B01D *5/00*; C07C *17/00*

U.S. Cl. 423—659 **27 Claims**



1. A process for recovering vaporized salt from a gaseous reaction effluent withdrawn from a reaction system employing the salt while simultaneously recovering heat from the reaction effluent, comprising:

contacting the gaseous reaction effluent with solid particles by suspending the solid particles in flowing gaseous reaction effluent to provide dilute phase transport contact, said solid particles being at a temperature at which vaporized salt condenses from the gas onto the solid particles, said solid particles being heated and said gaseous reaction effluent being cooled by said contact;

separating gaseous reaction effluent from the solid particles;

cooling separated solid particles in a fluidized bed, said fluidized bed being fluidized by a fluidizing gas, said particles being cooled in the fluidized bed to a temperature at which vaporized salt condenses onto the solid particles;

employing cooled solid particles for contacting the gaseous reaction effluent; and

recovering and recycling to the reaction system solid salt fines attrited from the solid particles and present in the fluidizing and reaction effluent gases, said solid salt fines being attrited in equilibrium with the condensation of vaporized salt onto the solid particles.

4,243,651

ALLERGY TEST

Donald J. Nalebuff, 89 Lake Shore Dr., Oakland, N.J. 07436

Filed Apr. 13, 1978, Ser. No. 896,135

Int. Cl.[2] G01N *33/16*

U.S. Cl. 424—1 **7 Claims**

1. A method of determining the sensitivity to a specific allergen which comprises

(a) determining the measurable bound radioactivities for a given unit of time of a first sample of known total IgE concentration and a plurality of dilutions thereof by effecting radioallergosorbent (RAST) tests on said first sample and each of said dilutions and measuring bound radioactivity for said unit of time;

(b) effecting a RAST test on a second sample of known total IgE concentration to determine the length of time required to measure a given amount of bound radioactivity;

(c) effecting a RAST test on a test sample and measuring bound radioactivity for said length of time;

(d) effecting a RAST test on a negative control sample and measuring bound radioactivity for said length of time;

(e) determining whether said test sample is specific allergen positive by comparing the measured bound radioactivities of said test sample with said negative control sample, said test sample being positive when said former measurement is more than double the latter measurement; and

(f) comparing the measured bound radioactivities of positive test sample with said first sample of known total IgE content and dilutions thereof.

4,243,652

GASTROINTESTINAL SCANNING AGENT

Marion D. Francis, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 14, 1978, Ser. No. 924,608

Int. Cl.[3] A61K *49/00, 43/00;* G01T *1/00*

U.S. Cl. 424—1 **20 Claims**

20. A process for visualizing the GI tract of humans and lower animals, comprising introducing into the GI tract of a human or lower animal a radiodiagnostic agent comprising a gamma radiation emitting radionuclide in substantially permanent association with a pharmaceutically-acceptable, substantially physiologically insoluble, particulate inorganic phosphate carrier.

4,243,653

NON-IONIC POLYIODO SUGAR SUBSTITUTED ANILINES

Milos Sovak, Rancho Sante Fe, and Ramachandra Ranganathan, San Diego, both of Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Apr. 27, 1979, Ser. No. 34,099

Int. Cl.[3] A61K *29/02;* C07H *15/18*

U.S. Cl. 424—5 **27 Claims**

1. Symmetrical triodobenzenes having at least one non-glycosidyl carbohydrate ether group and at least one acylated amino group, wherein the carbohydrate group is of from about three to six carbon atoms and the acylated amino group is of from about one to six carbon atoms, all of the annular carbon atoms being substituted.

24. An X-ray contrast medium formulation containing a sufficient amount to provide sufficient X-ray contrast of a compound according to any of claim **1**, **4**, **7**, and **13** in a physiologically acceptable carrier.

4,243,654

OXAZEPAM DERIVATIVES FOR IMMUNOASSAY REAGENTS

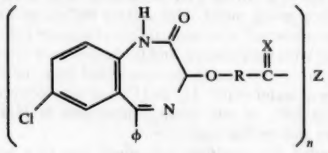
Richard S. Schneider, Saratoga, Calif., and Steven J. Gould, Swindham, Conn., assignors to Syva Company, Palo Alto, Calif.

Division of Ser. No. 793,973, May 5, 1977, abandoned, which is a continuation of Ser. No. 612,425, Sep. 11, 1975, Pat. No. 4,043,989. This application Sep. 11, 1978, Ser. No. 941,438

Int. Cl.[2] C07G *7/00;* A61K *29/00;* G01N *33/16*

U.S. Cl. 424—12 **3 Claims**

1. Antibodies prepared in response to an antigen of the formula



wherein:

R is a linking group of from 0 to 8 carbon atoms and 0 to 1 oxygen atom bonded solely to carbon as non-oxo carbonyl;

Z is an antigenic poly(amino acid);

n is at least 1 and not greater than the molecular weight of Z divided by 500; and

X is chalcogen or nitrogen.

4,243,655

DENTAL HEALTH-CARE AIDS

Roland E. Gunther, R.D. 1, Box 282, New Berlin, N.Y. 13411

Continuation-in-part of Ser. No. 960,106, Nov. 13, 1978, abandoned, Ser. No. 960,107, Nov. 13, 1978, abandoned, Ser. No. 960,108, Nov. 13, 1978, abandoned, Ser. No. 960,109, Nov. 13, 1978, abandoned, Ser. No. 960,110, Nov. 13, 1978, abandoned, Ser. No. 960,111, Nov. 13, 1978, abandoned, and Ser. No. 960,112, Nov. 13, 1978, abandoned. This application Sep. 4, 1979, Ser. No. 71,997

Int. Cl.[3] A61K *7/16, 7/26, 31/415, 35/54*

U.S. Cl. 424—19 **40 Claims**

1. Dental Health-care Aids compositions selected from the group consisting of dentifrice toothpastes dentifrice toothpowders mouthwashes chewing gums confections tooth-coating concentrates and extended-release buccal tablets comprising effective amounts optimum for a biotin-uptake blocking regimen unfavorable for biotin-requiring micro-organisms implicated in the human mouth mini-ecosystem production of dental caries plaque, and acid formation, in the mouth of Biotin-antagonists.

4,243,656

BIOSYNTHETIC POLYMERIC COMPOSITIONS

Erwin G. Walliczek, 13 Biarritz Ave., Beaumaris 3193, Victoria, Australia

Filed May 9, 1979, Ser. No. 37,474

Claims priority, application Australia, May 19, 1978, PD4440; Oct. 30, 1978, PD6580

Int. Cl.[3] A61K *31/78;* A61L *15/00*

U.S. Cl. 424—28 **7 Claims**

1. A biosynthetic polymeric composition adapted to form a vapor permeable film, said composition including: (a) 10% to 40% by weight of a water dispersible acrylic polymer contain-

ing from 50 to 500 monomeric units; (b) 2% to 30% by weight of a humectant selected from the group consisting of glycerol, polyethylene glycol, and propyl 1, 2 diol; (c) 0.5% to 20% by weight of a material selected from a group consisting of gelatin, gum acacia, and albumin; and (d) 30% to 87.5% by weight water.

4,243,657

HAIR COSMETIC

Takeo Okumura, Sakura; Atsuo Ishida, Chiba, and Shizuo Hayashi, Saitama, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 730,350, Oct. 7, 1976, abandoned. This application Sep. 1, 1978, Ser. No. 938,838

Claims priority, application Japan, Oct. 14, 1975, 50-123392

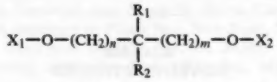
Int. Cl.³ A61K *7/06, 7/11*

U.S. Cl. 424—47 **12 Claims**

1. A homogeneous liquid hair cosmetic composition consisting essentially of

A. from 0.5 to 40 weight percent of a substance having a solidification temperature lower than minus 20° C. and selected from the group consisting of

1. a compound having the formula

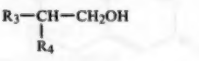


wherein X_1 is R- or

and X_2 is

or H, in which R is branched alkyl having 6 to 12 carbon atoms, R_1 is H, CH_3, C_2H_5 or C_3H_7, R_2 is H, CH_3, C_2H_5 or OH, and n and m each is an integer of from one to 3, and mixtures thereof,

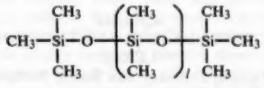
2. a compound having the formula



wherein R_3 is a linear or branched alkyl having 8 to 10 carbon atoms and R_4 is a linear or branched alkyl having 6 to 8 carbon atoms, and mixtures thereof, and

3. mixtures of component (1) and component (2),

B. from 0.5 to 10 weight percent of a compound or mixture of compounds having the formula



wherein l is an integer of from 3 to 14 and the viscosity of component B is from 2 to 10 cps, the weight ratio of components B/A being in the range of from 1/10 to 8/1,

C. and the balance consists essentially of an alcohol solvent effective for dissolving components A and B and selected from the group consisting of ethanol, propanol and isopropanol.

4,243,658

COMPOSITIONS AND METHODS FOR REDUCING ELUTION OF THERAPEUTIC AGENTS FROM TEETH

Robert W. H. Chang, Shoreview, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 865,681, Dec. 29, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 26,402

Int. Cl.³ A61K *7/18*

U.S. Cl. 424—52 **6 Claims**

1. A dentifrice composition for substantially effectively coating previously fluoride-treated teeth and thereby reducing elution of said fluoride from said teeth, said composition comprising

a fluoride-containing caries prophylactic agent provided that said agent is substantially free from polyvalent metal atoms; and

at least about 0.05% by weight of an anionic, water-dispersible, membrane-forming material which, when applied to the surface of said previously fluoride-treated teeth in an oral environment, complexes with the calcium of said teeth and forms a substantially continuous hydrophobic barrier thereon which substantially reduces the elution of said previously applied fluoride from said teeth, and which, when at equilibrium with the complex, has a formation constant in the range of about 0.5 to 8, said membrane-forming material having the formula

$$R_fSO_2N(R^2)R^3COOM$$

wherein R_f is a monovalent, stable, inert, fluorinated, saturated, non-polar radical containing from about 4 to 16 carbon atoms; R^2 is selected from hydrogen and alkyl groups containing from about 2 to 3 carbon atoms; R^3 is selected from alkylene and alkarylene groups that contain from about 1 to 10 carbon atoms; and M is selected from hydrogen, alkali metal, ammonium, and amine groups.

4,243,659

COMPOSITIONS FOR IMPROVING HAIR BODY AND METHOD OF USE

Angelina T. Balingit, Chicago, and Anthony A. Scafidi, Bellwood, both of Ill., assignors to Alberto-Culver Company, Melrose Park, Ill.

Filed May 24, 1979, Ser. No. 41,945

Int. Cl.³ A61K *7/06, 7/11*

U.S. Cl. 424—70 **20 Claims**

1. Liquid shampoo composition for increasing hair body by permanently swelling hair shafts with reduced loss of tensile strength, consisting essentially of an aqueous solution of a hair cleaning synthetic detergent, which is compatible with the other ingredients, in an effective hair washing concentration for undiluted application which contains on a parts by weight basis from 4 to 10% of bisulfite salt selected from the class consisting of sodium, potassium, ammonium bisulfite, and mixtures thereof, and from 2 to 12% of N.N'-dimethyl urea, said detergent being compatible with said bisulfite and said dimethyl urea, and said composition having a pH from 4.0 to 6.9.

4,243,660

COMPOSITE INSECT ATTRACTANT FOR MALE CABBAGE MOTHS AND A PROCESS FOR PREPARING ITS ACTIVE AGENTS

Csaba Szantay; Lajos Novak; Miklos Toth; Jozsef Balla; Bela Stefko, all of Budapest, and Attila Kis-Tamas, Pilisvörösvar, all of Hungary, assignors to Egyt Gyógyszervegyészeti Gyár, Budapest, Hungary

Filed Apr. 19, 1979, Ser. No. 31,583

Claims priority, application Hungary, Apr. 21, 1978, EE 2558

Int. Cl.³ A01N *25/00, 37/06*

U.S. Cl. 424—84 **5 Claims**

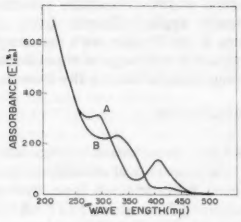
1. A composite insect attractant for male cabbage moths (*Mamestra brassicae*), which comprises

(a) (Z)-11-hexadecyl acetate as a first active agent A and
(b) (Z)-11-heptadecyl acetate as a second active agent B in a weight ratio of 70 to 99 parts A: 30 to 1 parts B.

4,243,661
GROWTH INCREASING AGENTS

Eisuke Ishihara, Miyanonishi; Hiroshi Yonehara, Tokyo; Katsuyuki Akasaki, Shimizu; Masao Minowa, and Katsumi Kobayashi, both of Shizuoka, all of Japan, assignors to Kumiai Chemical Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 830,773, Sep. 6, 1977, abandoned, which is a continuation of Ser. No. 736,523, Oct. 28, 1976, abandoned, which is a continuation of Ser. No. 681,198, Apr. 28, 1976, abandoned. This application Apr. 23, 1979, Ser. No. 32,253
Claims priority, application Japan, Oct. 28, 1975, 50-128910
Int. Cl.³ A61K *35/00*
U.S. Cl. 424—117 **6 Claims**



1. A method for promoting the growth of domestic animals which comprises administering to said animal a growth promoting effective amount of multhiomycin.

6. The method according to claim **1**, wherein said multhiomycin is administered to said animal in an amount of 0.1 to 500 ppm admixed in the feed or drinking water for said animal.

4,243,662
PLANT-VIRUS CONTROLLING AGENT

Kiro Asano, Kukizaki; Tsuyoshi Saito, Tokyo; Masayoshi Hatanaka, and Susumu Ikeda, both of Iwaki, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 943,474, Sep. 18, 1978. This application Apr. 12, 1979, Ser. No. 29,546
Claims priority, application Japan, Sep. 16, 1977, 52-111968
Int. Cl.³ A61K *31/73;* **C07H** *5/06*
U.S. Cl. 424—180 **3 Claims**

1. A method of protecting a plant from infection by a plant virus of the group consisting of tobacco mosaic virus, cucumber mosaic virus and cucumber green mottled mosaic virus, which comprises treating a plant of the species belonging to the Solanaceae family or to the Cucurbitaceae family with an aqueous solution of a product consisting essentially of nitrogen-containing polysaccharides having the elementary composition of 38 to 50% carbon, 2.5 to 10% nitrogen, 5.5 to 7.5% of hydrogen, the balance being oxygen, having a molecular weight between 500 and 10,000 and showing a characteristic infrared absorption band at about 1620 cm^{-1}, obtained by bringing a culture product of Basidiomycetes fungus into reation with an aqueous ammoniacal solution of a normality of 0.03 to 17 N, at a temperature of 150° to 250° C., under pressure of said aqueous ammoniacal solution at said reaction temperature by filtering the reaction product to obtain a filtrate and then, after purifying said filtrate, by drying said purified filtrate.

4,243,663
GLYCOLIPID COMPOSITIONS FOR TRANSPLANTED TUMOR IMMUNOTHERAPY

Ichiro Azuma, 1-2, Aoyamadai, Suita-shi, and Yuichi Yamamura, 1-9-22, Nikawa-takadai, Takarazuka-shi, both of Japan

Continuation-in-part of Ser. No. 809,884, Jun. 24, 1977, abandoned. This application Aug. 4, 1978, Ser. No. 931,050
Claims priority, application Japan, Jun. 25, 1976, 51-75866; Aug. 9, 1977, 52-95404
Int. Cl.³ C07H *13/02;* **A61K** *31/71, 31/72*
U.S. Cl. 424—181 **11 Claims**

1. An adjuvant composition for enhancing immunization against a transplanted tumor which comprises a glycolipid as active ingredient in concentration of from 10 γ to 10 mg/ml of composition, the saccharide moiety of said glycolipid being selected from fructose, sucrose and glucose, said composition further containing a pharmaceutically acceptable carrier.

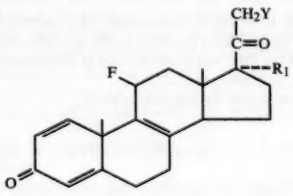
6. A method for imparting immunotherapy against a transplanted tumor in an animal subject, which comprises administering into the body of a tumor-carrying animal a composition containing as an active ingredient a glycolipid, having a saccharide moiety selected from the group consisting of fructose, sucrose and glucose, said composition additionally containing a pharmaceutically acceptable carrier.

4,243,664
NOVEL CORTICOIDS

Klaus Annen; Henry Laurent; Helmut Hofmeister; Rudolf Wiechert; Hans Wendt, and Joachim F. Kapp, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Division of Ser. No. 839,486, Oct. 4, 1977, Pat. No. 4,176,126. This application Mar. 13, 1979, Ser. No. 20,154
Claims priority, application Fed. Rep. of Germany, Oct. 4, 1976, 2645104
Int. Cl.³ C07J *5/00*
U.S. Cl. 424—243 **5 Claims**

1. A corticoid of the formula



wherein
Y is acyloxy of 1–10 carbon atoms; and
R_1 is acyloxy of 1–10 carbon atoms.

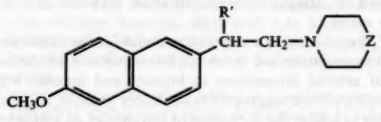
5. A method of treating inflammation in mammals which comprises topically administering an anti-inflammatorily effective amount of a corticoid of claim **1**.

4,243,665
2-HETEROCYCLYLALKYL-6-METHOXY-NAPHTHALENES

Thomas A. Purcell, Fontenay aux Roses; Braham Shroot, Cachan, and Daniel J. M. Galtier, Saint Cyr l'Ecole, all of France, assignors to Synthelabo, Paris, France

Filed Nov. 21, 1978, Ser. No. 962,760
Claims priority, application France, Nov. 24, 1977, 77 35307; Oct. 16, 1978, 78 29413
Int. Cl.³ C07D *241/04, 275/00;* **A61K** *31/54, 31/495*
U.S. Cl. 424—246 **7 Claims**

1. A compound of the formula:



wherein

R′ is hydrogen or methyl;

Z is O, S, S→O, SO_2 or NR_1;

R_1 is hydrogen, alkyl, $CONR_2R_3$, $COOR_2$, COR_2 or SO_2R_3;

each of R_2 and R_3 is independently hydrogen, alkyl, phenyl or CF_3; wherein each alkyl has 1 to 4 carbon atoms; in the form of racemate or enantiomer when R′ is CH_3, or a pharmaceutically acceptable salt thereof.

7. A method of treating a subject having an inflammatory condition comprising administering to said subject suffering therefrom a therapeutically effective dose of a compound according to one of claims **2** to **4**, **1** and **5**.

4,243,666

4-AMINO-2-PIPERIDINO-QUINAZOLINES

Simon F. Campbell, Deal; John C. Danilewicz, Ash; Colin W. Greengrass, Sandwich, and Rhona M. Plews, Canterbury, all of England, assignors to Pfizer Inc., New York, N.Y.

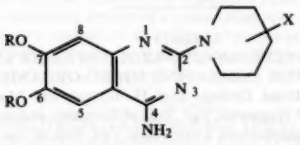
Filed May 14, 1979, Ser. No. 38,509

Claims priority, application United Kingdom, May 18, 1978, 20351/78

Int. Cl.[3] **A61K** *31/505;* **C07D** *401/04*

U.S. Cl. 424—248.54 **10 Claims**

1. Compounds having the general formula:

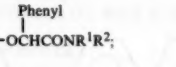


(I)

wherein

R is lower alkyl;

X, which is attached to the 3- or 4- position of the piperidino group, is selected from the group consisting of $—(CH_2)_nCONR^1R^2$, $—O(CH_2)_nCONR^1R^2$ and



wherein

n is 0 or an integer from 1 to 2;

R^1 is selected from the group consisting of hydrogen and lower alkyl;

R^2 is selected from the group consisting of phenyl, mono-lower alkylphenyl, mono- and di-lower alkoxy phenyl, mono- and di-chlorophenyl, C_{3-7} cycloalkyl, lower alkenyl, lower alkynyl, lower alkyl and mono-substituted lower alkyl wherein the substitutent is selected from the group consisting of C_{3-7} cycloalkyl, hydroxy, lower alkoxy, lower alkoxy carbonyl, phenyl, mono-lower alkylphenyl, mono- and di-lower alkoxyphenyl, mono- and di-chlorophenyl, phenoxy, chloro and NR^3R^4 wherein R^3 is selected from the group consisting of hydrogen and lower alkyl and R^4 is selected from the group consisting of lower alkyl, lower alkanoyl and lower alkylsulfonyl; with the proviso that any O, N or chloro atom in R^2 is separated by at least two carbon atoms from the nitrogen atom to which R^2 is attached;

R^1 and R^2 taken together with the nitrogen atom to which they are attached are selected from the group consisting of morpholino, 1,2,3,4-tetrahydroisoquinolyl and mono- and dimethoxy substituted 1,2,3,4-tetrahydroisoquinolyl;

and the pharmaceutically acceptable acid addition salts thereof.

9. A pharmaceutical composition comprising antihypertensive amount of a compound of claim **1** or a pharmaceutically acceptable acid addition salt thereof, together with a pharmaceutically acceptable diluent or carrier.

4,243,667

2-BENZHYDRYLIMINO-1,3-DIAZACARBOCYCLIC COMPOUNDS AS INHIBITORS OF GASTRIC SECRETION

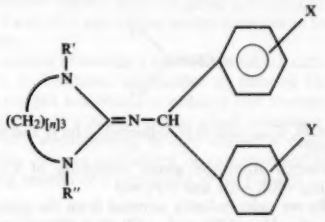
Chris R. Rasmussen, Ambler, Pa., assignor to McNeil Laboratories, Incorporated, Fort Washington, Pa.

Division of Ser. No. 815,393, Jul. 13, 1977, Pat. No. 4,174,401. This application Jan. 30, 1979, Ser. No. 7,758

Int. Cl.[3] **A61K** *31/415;* **C07D** *239/14*

U.S. Cl. 424—251 **2 Claims**

2. A method for inhibiting gastric secretion which comprises administering to a subject with gastric hyperacidity an effective anitisecretory amount of a compound of the formula



wherein R′ and R″ independently are selected from the group consisting of hydrogen and methyl, X and Y independently are selected from the group consisting of hydrogen, lower alkoxy, lower alkyl having up to five carbon atoms and halo; and the pharmaceutically-acceptable acid addition salts thereof in admixture with a pharmaceutical carrier.

4,243,668

OCTAHYDRO-1H-BENZO[4,5]FURO[3,2-E]-ISOQUINOLINE ANALGESIC AND NARCOTIC ANTAGONISTIC COMPOUNDS

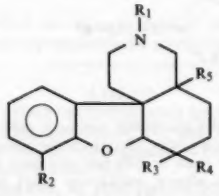
Engelbert Ciganek, Kennett Square, Pa., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 948,038, Oct. 2, 1978, abandoned. This application Jul. 9, 1979, Ser. No. 54,447

Int. Cl.[3] **A61K** *31/47;* **C07D** *217/04*

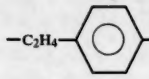
U.S. Cl. 424—258 **39 Claims**

1. An octahydro-1H-benzo[4,5] furo[3,2-e]isoquinoline compound of the formula



wherein the perhydro isoquinoline has a trans configuration,

R_1 is selected from the group consisting of —H, C_{1-10}alkyl, $—CH_2R_6$,



and $(CH_2)_nCN$ in which n=1–3;

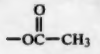
R_2 is selected from the group consisting of H, —OH, C_{1-12}alkoxy and C_{2-12}acyloxy of an alkanoic acid;

R_3 is separately selected from the group consisting of —H, —OH, $—CH_3$, C_{1-2}alkoxy, C_{2-12}acyloxy of an alkanoic acid, —F and $—N_3$;

R_4 is separately selected from the group consisting of —H and —F;

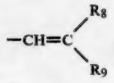
R_{3-4} in combination are selected from the group consisting of methylene and keto;

R_5 is selected from the group consisting of —H, —OH,



and $—OCH_3$;

R_6 is selected from the group consisting of



—C≡CH, C_{3-6}cycloalkyl, 2-thienyl, 2-furyl and tetrahydrofuryl;

R_7 is selected from the group consisting of C_{1-3}alkyl, $—OCH_3$, —Cl, —Br and —F; and

R_8 and R_9 are independently selected from the group consisting of —H, $—CH_3$ and —Cl; or a pharmaceutically suitable acid addition salt thereof.

27. A method for the treatment of pain in a mammal comprising administering internally to the mammal an analgesically effective amount of a compound of claim 1.

4,243,669

2-SUBSTITUTED BENZISOTHIAZOLONES

Keith H. Baggaley, Redhill, England, assignor to Beecham Group Limited, England

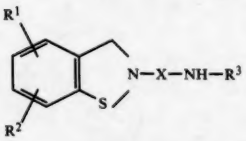
Division of Ser. No. 936,861, Aug. 25, 1978, which is a division of Ser. No. 850,786, Nov. 11, 1977, which is a division of Ser. No. 738,000, Nov. 2, 1976, Pat. No. 4,113,728. This application Aug. 20, 1979, Ser. No. 67,949

Claims priority, application United Kingdom, Nov. 17, 1978, 47373/75

Int. Cl.[3] **A61K** *31/425;* **C07D** *417/02*

U.S. Cl. 424—263 **20 Claims**

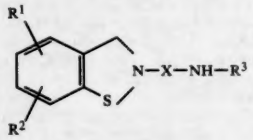
1. A compound of the formula (V)



(V)

or a pharmaceutically acceptable non-toxic acid addition salt thereof where there is a basic nitrogen in the molecule wherein R^1 and R^2 are the same or different and each is hydrogen, lower alkyl, lower alkoxy, halo-lower alkyl, nitro, amino, acetylamino or halogen, or R^1 and R^2 when attached to adjacent carbon atoms from an alkylene moiety of 3 to 6 carbon atoms or an oxyalkyleneoxy moiety of 1 to 3 carbon atoms; R^3 is a nitrogen-containing heterocyclic ring unsubstituted or substituted by lower alkyl, carboxy or alkoxycarbonyl; and X is a bond or straight or branched chain alkylene of 1 to 12 carbon atoms.

6. A pharmaceutical composition useful for the inhibition of platelet aggregation and thrombus formation and for the treatment of arterial thromboses in humans and animals which comprises a platelet-aggregation-inhibitory amount, an amount sufficient to inhibit the formation of thrombs or an anti-arterial thrombotically effective amount of a compound of the formula



(V)

or a pharmaceutically acceptable nontoxic acid addition salt thereof when there is a basic nitrogen atom in the molecule, wherein R^1 and R^2 are the same or different and each is hydrogen, lower alkyl, lower alkoxy, halo-lower alkyl, nitro, amino, acetylamino or halogen; or R^1 and R^2 when attached to adjacent carbon atoms form an alkylene moiety of 3 to 6 carbon atoms or an oxyalkyleneoxy moiety of 1 to 3 carbon atoms; X is a bond or a straight or branched chain alkylene of 1 to 12 carbon atoms; and R^3 is a nitrogen-containing heterocyclic ring unsubstituted or substituted by lower alkyl, carboxy or alkoxycarbonyl; in combination with a pharmaceutically acceptable carrier.

7. The composition according to claim 6, wherein said compound is 2-[2′-pyridylaminomethyl]-1,2-benzisothiazol-3-one.

4,243,670

α-(4-BIPHENYLYL)-BENZYL-AZOLIUM SALTS AND THEIR USE FOR COMBATING MICRO-ORGANISMS

Erik Regel; Wilfried Draber; Karl H. Büchel, and Manfred Plempel, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

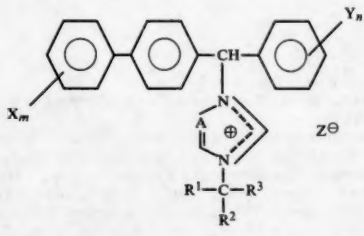
Continuation of Ser. No. 833,630, Sep. 15, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,783

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1976, 2643563

Int. Cl.[3] **A01N** *43/26, 43/28;* **C07D** *233/56, 249/08*

U.S. Cl. 424—269 **9 Claims**

1. An α-(4-Biphenylyl)-benzylazolium salt of the formula



(I)

in which

A represents the CH group or a N atom,

R^1 and R^2 are identical or different and each represents hydrogen, alkyl with 1 to 4 carbon atoms, unsubstituted phenyl or phenyl substituted by halogen, alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms alkoxy with 1 to 4 carbon atoms, alkylthio with 1 to 4 carbon atoms, nitro or cyano,

R^3 represents unsubstituted or substituted phenyl or biphenyl, phenylalkyl with 1 to 4 carbon atoms in the alkyl part,

phenylcarbonyl or phenylcarbonylalkyl group with 1 to 4 carbon atoms in the alkyl part the substituents being fluorine, chlorine, bromine, alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms, nitro or cyano,

X represents halogen, alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms, alkylthio with 1 to 4 carbon atoms, nitro or cyano,

Y represents X or unsubstituted phenyl or phenyl substituted by halogen, alkyl with 1 to 6 carbon atoms, halogenoalkyl, alkoxy with 1 to 4 carbon atoms, alkylthio with 1 to 4 carbon atoms, nitro or cyano,

m and n each represents 0 or an integer of from 1 to 5 and

Z represents the anion of an inorganic or organic acid.

4. A method of combatting micro-organisms which comprises applying to the micro-organisms or to a habitat thereof, an effective amount of a compound of claim 1 alone or in admixture with a diluent or carrier.

4,243,671
INHIBITION OF THROMBOXANE SYNTHETASE FORMATION AND ARACHIDONIC ACID-INDUCED PLATELET AGGREGATION AND BRONCHOCONSTRICTION

Don N. Harris, Somerset; Marie B. Phillips, Skillman, and Roland Greenberg, Princeton, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 16, 1979, Ser. No. 30,420
Int. Cl.³ A61K *31/415*
U.S. Cl. 424—273 R **7 Claims**

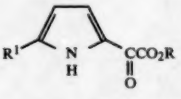
1. A method of inhibiting thromboxane synthetase activity, and thus inhibiting arachidonic acid-induced platelet aggregation and broncho-constriction, which comprises administering to the circulatory system of a mammalian host in need thereof an effective amount of 1-(3-phenyl-2-propenyl)-1H-imidazole or a pharmaceutically acceptable acid addition salt thereof.

4,243,672
5-SUBSTITUTED 2-PYRROLEGLYOXYLIC ACIDS, 5-SUBSTITUTED 2-PYRROLYLGLYCINES AND DERIVATIVES THEREOF

Ian T. Barnish, Ramsgate; Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, all of England, assignors to Pfizer Inc., New York, N.Y.

Filed Aug. 28, 1979, Ser. No. 70,396
Claims priority, application United Kingdom, Aug. 30, 1978, 34985/78; Feb. 1, 1979, 03635/79
Int. Cl.³ C07D *207/333;* A61K *31/40*
U.S. Cl. 424—274 **21 Claims**

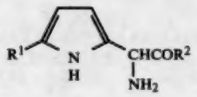
1. A compound of the formula



and pharmaceutically acceptable cationic salts thereof, wherein R is hydrogen or alkyl having from one to four carbon atoms;

R^1 is a member selected from the group consisting of alkenyl having from three to six carbon atoms, cycloalkylthio having from five to seven carbon atoms and AR^3 where A is a member bonded to the pyrrole ring and is selected from the group consisting of alkylene and alkylenethio having from one to four carbon atoms, and alkenylene having from two to four carbon atoms and R^3 is a member selected from the group consisting of cycloalkyl having from three to seven carbon atoms, cycloalkenyl having from five to seven carbon atoms and $C_6H_4R^4$ where R^4 is a member selected from the group consisting of H, F, Cl, Br, I and alkyl and alkoxy having from one to four carbon atoms.

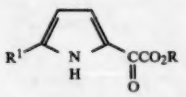
8. An L- or DL-compound of the formula



and pharmaceutically acceptable cationic and acid addition salts thereof wherein R^2 is hydroxy, amino or alkoxy having from one to four carbon atoms;

R^1 is a member selected from the group consisting of alkenyl having from three to six carbon atoms, cycloalkylthio having from five to seven carbon atoms and AR^3 where A is a member bonded to the pyrrole ring and is selected from the group consisting of alkylene and alkylenethio having from one to four carbon atoms and alkenylene having from two to four carbon atoms and R^3 is a member selected from the group consisting of cycloalkyl having from three to seven carbon atoms, cycloalkenyl having from five to seven carbon atoms and $C_6H_4R^4$ where R^4 is a member selected from the group consisting of H, F, Cl, Br, I and alkyl and alkoxy having from one to four carbon atoms.

16. A method of treating a mammalian subject suffering from a disease or condition attributable to reduced blood flow, reduced oxygen availability or reduced carbohydrate metabolism in the cardiovascular system which comprises orally or parenterally administering to said subject a cardiovascular blood flow, oxygen availability or carbohydrate metabolism increasing amount of a compound of the formula



or a pharmaceutically acceptable cationic salt thereof, wherein R is hydrogen or alkyl having from one to four carbon atoms; and

R^1 is a member selected from the group consisting of alkyl and alkylthio having from one to ten carbon atoms, alkenyl having from three to six carbon atoms, cycloalkylthio having from five to seven carbon atoms and AR^3 where A is a member bonded to the pyrrole ring and is selected from the group consisting of alkylene and alkylenethio having from one to four carbon atoms, and alkenylene having from two to four carbon atoms and R^3 is a member selected from the group consisting of cycloalkyl having from three to seven carbon atoms, cycloalkenyl having from five to seven carbon atoms and $C_6H_4R^4$ where R^4 is a member selected from the group consisting of H, F, Cl, Br, I and alkyl and alkoxy having from one to four carbon atoms.

18. The method according to claim 16 wherein said compound is 2-(5-cyclopropylmethyl-2-pyrrolyl)glyoxylic acid.

4,243,673
ANALGESIC COMPOSITIONS AND METHODS OF USE

Robert J. Capetola, Doylestown, Pa., and John L. McGuire, White House Station, N.J., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Dec. 20, 1978, Ser. No. 971,472
Int. Cl.² A61K *31/38, 31/165*
U.S. Cl. 424—275 **5 Claims**

1. A method of controlling pain in mammals which comprises administering to a mammal an effective amount of a

composition comprising from about 0.5 mg/kg to about 22 mg/kg of α-methyl-4-(2-thienylcarbonyl) benzene acetic acid and from about 1 mg/kg to about 200 mg/kg of N-(4-hydroxyphenyl) acetamide.

4,243,674

9-HYDROXYDIBENZO[b,d]PYRANS AND INTERMEDIATES THEREFORE

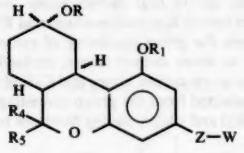
Jasjit S. Bindra, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 819,471, Jul. 27, 1977, Pat. No. 4,143,139, which is a continuation of Ser. No. 730,672, Oct. 7, 1976, abandoned, which is a continuation-in-part of Ser. No. 628,210, Nov. 3, 1975, abandoned. This application Jun. 12, 1978, Ser. No. 914,664

Int. Cl.³ A61K *31/35;* **C07D** *311/04*

U.S. Cl. 424—283 **16 Claims**

1. A compound having the formula



wherein

R is selected from the group consisting of hydrogen and alkanoyl having from one to five carbon atoms;

R_1 is selected from the group consisting of hydrogen and alkanoyl having from one to five carbon atoms

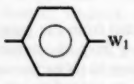
each of R_4 and R_5 is selected from the group consisting of hydrogen, methyl and ethyl;

Z is $-(alk_1)_m-X-(alk_2)_n-$ wherein each of (alk_1) and (alk_2) has from 1 to 9 carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than 9;

each of m and n is 0 or 1;

X is selected from the group consisting of O, S, SO and SO_2; and

W is



wherein W_1 is selected from the group consisting of hydrogen, fluoro and chloro;

12. A process for producing an anti-hypertensive effect in a mammal which comprises admistering to the mammal an anti-hypertensive producing quantity of a compound of claim 1.

4,243,675

(BIS)DITHIOCARBAMATE) SALTS

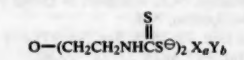
Charles W. Martin, Lake Jackson, and Eldon L. Ward, Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 951,915, Oct. 16, 1978, Pat. No. 4,203,999. This application May 21, 1979, Ser. No. 41,159

Int. Cl.³ A01N *47/10;* **A61K** *31/325*

U.S. Cl. 424—286 **7 Claims**

1. A compound of the formula



wherein X and Y are not the same and both represent a bivalent transition metal cation of the group consisting of Zn, Mn, Cu, Co, Fe and Ni and a+b=1, with the proviso that a+b are, individually, greater than 0.

6. A method for controlling fungi which comprises applying to said fungi or their habitat an antifungal amount of a compound of claim 1.

4,243,676

PROCESS FOR PREPARING OVERBASED NAPHTHENIC MICRONUTRIENT COMPOSITIONS

Wahid R. Ali, Pointe-a-Pierre, Trinidad and Tobago, assignor to Texaco Trinidad, Inc., Pointe-a-Pierre, Trinidad and Tobago

Filed May 17, 1979, Ser. No. 40,008

Int. Cl.³ A01N *55/02, 37/00, 59/20, 59/16*

U.S. Cl. 424—294 **6 Claims**

1. In a process for preparing a micronutrient composition containing an overbased oil soluble naphthenate of a metal selected from the group of molybdenum, copper, manganese and iron by reacting in a reactor having discharge lines at ambient temperature and pressure a solution of naphthenic acids having a molecular weight ranging from about 200 to about 600 in a light aromatic solvent of low viscosity having a boiling point ranging up to about 300° F. with an alcoholic solution of alkali metal hydroxide and an aqueous solution of the sulfate of the selected metal, the ratio of equivalents of metal to naphthenic acids being from about 1 to about 20; the steps of distilling at atmospheric pressure substantially all of the alcohol from the reaction mixture, some of the aromatic solvent and some of the water present but retaining enough water in the system to keep the resulting alkali metal sulfate in aqueous solution; continuing said distillation until the distillation temperature reaches the boiling point of the resulting aromatic solvent-water azeotrope, and separating an aqueous phase containing the alkali metal sulfate from an organic phase containing the desired overbased naphthenate whereby cake formation tending to block said discharge lines is eliminated.

4,243,677

INSECTICIDAL PERHALOALKYLVINYLCYCLOPROPANECARBOXYLATES

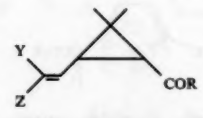
John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Continuation of Ser. No. 927,198, Jul. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 870,973, Jan. 20, 1978, abandoned. This application Jul. 30, 1979, Ser. No. 65,257

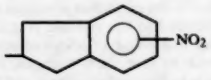
Int. Cl.³ A01N *53/00;* **C07C** *79/22*

U.S. Cl. 424—305 **3 Claims**

1. A compound of the formula



wherein one of Y and Z is trihalomethyl and the other is halogen and R is $-OR^1$ where R^1 is represented by the formula



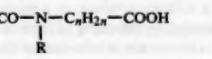
3. A method for insect control which comprises applying to the locus where control is desired an insecticidally effective amount of the compound of claim 1 or 2.

4,243,678
ACYLHYDROCARBYLAMINOALKANOIC ACIDS, COMPOSITIONS AND USES

Walter Krastinat, Constance, Fed. Rep. of Germany, assignor to Byk Gulden Lomberg Chemische Fabrik GmbH, Constance, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 969,701
Claims priority, application Luxembourg, Dec. 30, 1977, 78865; Switzerland, Jun. 14, 1978, 6504/78; Jun. 14, 1978, 6505/78
Int. Cl.³ A01N *37/12*; C07C *101/44, 101/16, 101/04*
U.S. Cl. 424—319 100 Claims

1. An acyl(γ-, δ- or ε-)aminoalkanoic acid of the formula



wherein

R is a member selected from the group consisting of optionally-substituted and optionally-hydrogenated biphenylyl, optionally-substituted and optionally-hydrogenated bicyclic aryl with from 8 to 12 ring carbon atoms and a radical of the formula

R^1 is aliphatic hydrocarbyl, alicyclic hydrocarbyl, phenyl or substituted phenyl;

R^2 is —H, alkyl, alkenyl or alkynyl;

R^3 is —H, alkyl, cycloalkyl, phenyl, substituted phenyl or, together with R^4, alkylene;

R^4 is alkyl, cycloalkyl, phenyl, substituted phenyl, phenalkyl, substituted phenalkyl or, together with R^3, alkylene; R^4 has at least 3 carbon atoms when R^4 is alkyl, R^2 is —H or methyl, R^3 is —H, and R^1 is alkyl, phenyl or substituted phenyl;

or R^2, R^3 and R^4, together with the carbon atom to which each is bound, are adamantyl; and

n is 3, 4 or 5;

any substituent on a ring carbon atom being a member selected from the group consisting of halo, lower alkyl, hydroxy, lower alkoxy, lower alkylmercapto, lower aliphatic hydrocarbyl carbonyloxy, amino, monosubstituted amino, disubstituted amino, nitro, trifluoromethyl; any substituent of monosubstituted amino or of disubstituted amino being independently selected from the group consisting of lower alkyl and lower aliphatic hydrocarbyl carbonyloxy; and any substituent of substituted phenylalkyl being a nuclear substituent;

a salt of such acylaminoalkanoic acid with a base or an ester of such acid with a lower alkanol, a phenalkanol or a nuclearly-substituted phenalkanol.

51. A pharmacologically-active and physiologically-acceptable pharmaceutical composition comprising from 0.5 to 1000 milligrams of at least one pharmacologically-active and physiologically-acceptable compound according to claim 2 in combination with a substantially-inert carrier therefor.

4,243,679
S-(3-METHYL-2-BUTENYL)CYSTEINE

Jorge D. Adsara, 41, calle Dalmases, Barcelona-17, Spain; Silvano Casadio, 11, via Tantardini, Milano, Italy; Jose M. B. Ribalta, 125 bis, calle Mayor de Sarria, and Leonida Bruseghini, 53, calle Mayor de Sarria, both of Barcelona-17, Spain

Filed Apr. 19, 1979, Ser. No. 31,612
Claims priority, application Spain, Apr. 22, 1978, 469.060
Int. Cl.³ A61K *31/195*
U.S. Cl. 424—319 1 Claim

1. A method of treating a patient for fluidification and removal of tracheabronchial mucus, pathological substances and foreign bodies from the respiratory tract comprising administering orally, by inhalation or per rectum daily dosages of 200 mg to 3.00 g S-(3-methyl-2-butenyl)-cysteine.

4,243,680
METHOD OF REDUCING INFESTATION OF CITRUS RUST MITES ON CITRUS TREES

James L. Taylor, DeLand, Fla., assignor to Thompson-Hayward Chemical Company, Kansas City, Kans.

Filed Feb. 7, 1979, Ser. No. 10,274
Int. Cl.³ A01N *47/28*
U.S. Cl. 424—322 15 Claims

1. A method of reducing infestation of citrus crops by citrus rust mites comprising subjecting the developmental stages of said mites located on said citrus crops to the action of a composition comprising a miticidally effective amount of a compound selected from the group consisting of

N-(2,6-difluorobenzoyl)-N′-(3-fluoro-4-chlorophenyl) urea;
N-(2,6-dichlorobenzoyl)-N′-(4-chlorophenyl) urea;
N-(2,6-dichlorobenzoyl)-N′-(4-trifluoromethylphenyl) urea;
N-(2,6-difluorobenzoyl)-N′-(3,4-dichlorophenyl) urea;
N-(2,6-dichlorobenzoyl)-N′-(3-fluoro-4-bromo-phenyl) urea;
N-(2,6-dichlorobenzoyl)-N′-(3-fluoro-4-iodophenyl) urea;
N-(2,6-dichlorobenzoyl)-N′-(ethyl)-N′-(4-bromophenyl) urea;
N-(2,6-dichlorobenzoyl)-N′-(2-fluoro-4-iodophenyl) urea;
N-(2,6-dichlorobenzoyl)-N′-(methyl)-N′-(4-chlorophenyl) urea;
N-(2,6-dichlorobenzoyl)-N′-(ethyl)-N′-(4-chlorophenyl) urea;
N-(2,6-difluorobenzoyl)-N′-(4-bromophenyl) urea;
N-(2,6-difluorobenzoyl)-N′-(4-trifluoromethylphenyl) urea;
N-(2,6-difluorobenzoyl)-N′-(3-trifluoromethylphenyl) urea; and
N-(2,6-difluorobenzoyl)-N′-(methyl)-N′-(4-fluorophenyl) urea

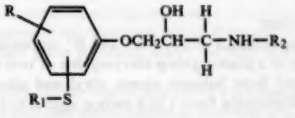
and a finely divided inert carrier therefor.

4,243,681
ALKYLTHIOPHENOXYPROPANOLAMINES AND PHARMACEUTICAL COMPOSITIONS AND USES THEREOF

Duane F. Morrow, and William L. Matier, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Continuation-in-part of Ser. No. 942,222, Sep. 14, 1978, abandoned, which is a continuation-in-part of Ser. No. 841,168, Oct. 11, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,497
Int. Cl.³ A61K *31/135*; C07C *83/00, 91/00, 93/06*
U.S. Cl. 424—330 15 Claims

1. A compound of the formula



or an acid addition salt thereof wherein

R is hydrogen or methyl;

R_1 is alkyl of 1 to 4 carbon atoms inclusive;

R_2 is straight chain alkyl of 6 to 12 carbon atoms inclusive, or cyclohexylalkyl having 2 to 4 carbon atoms in the alkylene chain.

11. The therapeutic process for treating a mammal requiring vasodilation which comprises administering to said mammal an effective vasodilating amount of a compound as claimed in claim 1.

4,243,682

FLUORONAPHTHYLONES

Alexander C. Goudie, Harlow, and Laramie M. Gaster, Sawbridgeworth, both of England, assignors to Beecham Group Limited, England

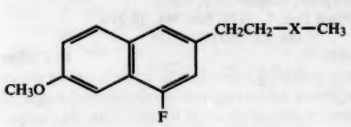
Filed Oct. 23, 1978, Ser. No. 953,465

Claims priority, application United Kingdom, Nov. 3, 1977, 45712/77

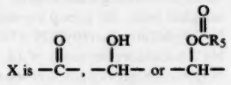
Int. Cl.[3] A01N *35/00*; C07C *49/23*

U.S. Cl. 424—331 8 Claims

1. A compound of the formula:



wherein



wherein R_5 is alkyl of from 1 to 4 carbon atoms.

5. A pharmaceutical composition which comprises an antiinflammatory effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier therefor.

4,243,683

TERTIARY ALCOHOLS

Barbara J. Broughton, Croydon; Michael P. L. Caton, Upminster, and David J. Hambling, Hornchurch, all of England, assignors to May & Baker Limited, Essex, England

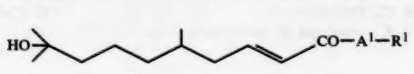
Filed Oct. 3, 1978, Ser. No. 948,156

Claims priority, application United Kingdom, Oct. 5, 1977, 41482/77

Int. Cl.[3] C07C *43/23, 49/835*

U.S. Cl. 424—331 15 Claims

1. A tertiary alcohol of the formula:



wherein either

(i) A^1 represents a direct bond and R^1 represents a phenyl group or a phenyl group carrying one or two substituents selected from halogen atoms, alkyl and alkoxy groups, each containing from 1 to 4 carbon atoms, and the trifluoromethyl group or

(ii) A^1 represents an alkylene group containing from 1 to 10 carbon atoms and R^1 represents a phenyl, phenoxy, or phenylthio group carrying one or two substituents selected from halogen atoms, alkyl and alkoxy groups, each containing from 1 to 4 carbon atoms, and the trifluoromethyl group.

14. A composition suitable for use against insects and acarines which comprises, as active ingredient, a tertiary alcohol as claimed in claim 1 in association with one or more diluents compatible with the said compound.

4,243,684

PREPARATION OF CHEESE WITH ROPY LACTIC ACID BACTERIA

Hans-Dieter Pruss, Cologne, and Lütje-Wilhelm Bahrs, Halstenbek, both of Fed. Rep. of Germany, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 806,964, Jun. 16, 1977, abandoned. This application May 4, 1978, Ser. No. 903,647

Claims priority, application United Kingdom, Jun. 18, 1976, 25342/76

Int. Cl.[3] A23C *19/02*

U.S. Cl. 426—40 2 Claims

1. In the process for preparing a soft cheese comprising the steps wherein:

(a) milk, a milk-by-product, or a mixture thereof is subjected to a membrane filtration to form a concentrate;

(b) said concentrate is admixed with a lactic acid bacteria culture;

(c) said admixture is fermented until a precheese is formed; and

(d) said precheese is converted into a soft cheese, the improvement comprising said lactic acid bacteria culture being a ropy culture having a thread length of at least 5 centimeters by the quick pipette test, wherein a pipette is dipped into a sour milk produced with said ropy culture, sour milk is sucked into said pipette and the pipette is pulled out from the surface of the sour milk to form said thread between the pipette and the surface of the sour milk.

4,243,685

PROCESS FOR THE PREPARATION OF FERMENTATION MEDIA SUITABLE FOR CULTURING YEAST FOR ANIMAL CONSUMPTION AND MICROSPORES AND/OR FOR THE PRODUCTION OF PROTEIN FROM VEGETABLE WASTE MATTER

Agoston Simon, and Zoltán Lengyel, both of Budapest, Hungary, assignors to Chincin Gyógyszer és Vegyészeti Termékek Gyara Rt., Budapest, Hungary

Continuation-in-part of Ser. No. 689,345, May 24, 1976, abandoned. This application Jun. 28, 1978, Ser. No. 919,982

Claims priority, application Hungary, Jun. 2, 1975, CI 1581

Int. Cl.[3] A23K *1/14*

U.S. Cl. 426—53 2 Claims

1. A process for the preparation of fermentation media suitable for producing yeast for animal consumption and/or proteins starting from a vegetable waste matter, comprising the steps of:

(a) hydrolyzing comminuted vegetable waste matter containing polysaccharides and selected from the group which consists of cornstalks, sunflower stalks, leaves, algae and reeds with a dilute aqueous solution of sulfuric acid at a pH of about 1.5 and at a temperature of about 80° to 140° C., separating the resulting liquid phase, adjusting the separated liquid phase to a pH of 3.0 to 6.0, and supplementing the liquid phase with an effective amount of a compound selected from the group which consists of ammonium hydroxide or ammonium sulfate and potassium dihydrogen phosphate as inorganic ammonium phosphate nutrients to give a fermentation medium suitable for producing yeast for animal consumption;

(b) boiling the solid phase obtained after the acid hydrolysis of the comminuted vegetable matter with a dilute alkali-metal hydroxide base for 5 to 20 minutes, and repeating this alkaline boiling step at least once;

(c) separating the solid and liquid phases obtained in step (b) from each other;

(d) adjusting the pH of the separated liquid phase obtained in step (c) to about 1.5 to obtain a precipitate containing protein which is separated from the mother liquor, and recovering the separated protein;

(e) adjusting the pH of the mother liquor to 3.0 to 6.0; and

(f) supplementing the mother liquor with effective amounts

of inorganic ammonium and phosphate compounds suitable for culturing fungi and combining said fermentation medium of step (a) therewith.

4,243,686

PROCESS FOR IMPROVING THE PALATABILITY OF STRAW FOR ANIMAL FEED

Cleanthes Israilides, Eugene; Youn W. Han, and Arthur W. Anderson, both of Corvallis, all of Oreg., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 30, 1979, Ser. No. 43,975
Int. Cl.[3] A23K *1/22*
U.S. Cl. 426—53 6 Claims

1. A process for increasing the palatability, digestibility, and protein content of straw, which comprises

(a) mixing the straw with an aqueous solution containing 0.1–0.5 normal hydrochloric acid and 0.1–0.5 normal phosphoric acid in the proportion of one part of straw to about 2–4 parts of aqueous solution at a temperature of about 100°–125° C. for a period of about 30–60 minutes.

(b) adding to the acid treated straw an amount of ammonia to provide a pH of about 4.0–4.5,

(c) aerobically fermenting the ammoniated acid-treated straw with a microorganism at a temperature of about 25°–30° C. for a period of about 1–7 days, and

(d) drying the fermented product.

4,243,687

FREEZE-DRIED NATURAL SOUR DOUGH STARTER

Leo Kline, 1828 Mendocino St., Richmond, Calif. 94804

Division of Ser. No. 805,681, Jun. 13, 1977, Pat. No. 4,140,800.
This application Jan. 10, 1979, Ser. No. 2,476
The portion of the term of this patent subsequent to Feb. 20, 1996, has been disclaimed.
Int. Cl.[3] A21D *8/04*
U.S. Cl. 426—62 16 Claims

1. A freeze-dried bakery composition comprising Lactobacillus sanfrancisco in a flour culture media which has been subjected to incubation conditions suitable for the growth of said bacteria prior to freeze-drying, said Lactobacillus sanfrancisco being initially present in said culture media to provide an initial count of at least about 5×10^6 viable cells per gram of culture media prior to being subjected to said incubation conditions, at least about 20% of the viable bacteria produced during incubation being recoverable after freeze drying, the weight ratio of flour to water in said culture media prior to freeze-drying being about 1:1 to 1:2.5, the gluten of said flour being substantially undeveloped during said incubation, said culture media containing at least about 6% by weight of at least one disaccharide stabilizer prior to freeze-drying to improve recovery of viable Lactobacillus sanfrancisco, and a residue of water of not over about 4% by weight.

4,243,688

FLAVORING WITH 2-SUBSTITUTED-4,5-DIMETHYL-Δ^3-THIAZOLINES

Manfred H. Vock, Locust; Christopher Giacino, Califon; Anne Hruza, Bricktown; Donald A. Withycombe, Lincroft; Braja D. Mookherjee, Holmdel, and Cynthia J. Mussinan, Bricktown, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation of Ser. No. 17,806, Mar. 5, 1979, abandoned, which is a continuation-in-part of Ser. No. 730,536, Oct. 7, 1976, abandoned. This application Dec. 5, 1979, Ser. No. 100,535
Int. Cl.[3] A23L *1/234, 1/226*
U.S. Cl. 426—535 1 Claim

1. A flavor composition for increasing the sweet milk chocolate and nut-like notes of chocolate foodstuffs comprising a 50:50 mixture of 2-(2'-methyl-n-propyl)-4,5-dimethyl-Δ^3-thiazoline:2-n-propyl-2,4-trimethyl-Δ^3-thiazoline and the remainder of said composition being a mixture of:

2-Methyl pyrazine;
2,6-Dimethyl pyrazine;
2,3,5,6-Tetramethyl pyrazine; and
3-Phenyl-4-pentenal.

4,243,689

NON-FRIED INSTANT COOKING DRY NOODLES AND A METHOD FOR PRODUCING SUCH NOODLES

Sadao Kokeguchi, Ibaragi; Hiroshi Takahashi, Suita; Ken Okada, and Sanpei Murakami, both of Osaka, all of Japan, assignors to Kanebo Foods Ltd., Tokyo, Japan

Filed Jan. 4, 1979, Ser. No. 1,352
Claims priority, application Japan, Jan. 12, 1978, 53/3063
Int. Cl.[3] A23L *1/16*
U.S. Cl. 426—557 17 Claims

1. A method of manufacturing non-fried oil-free instant cooking dry noodles, comprising the steps of:

(a) preparing a mixture of raw noodle material consisting essentially of at least one starch-containing component comprised mainly of wheat flour and having a water content of at least 25% by weight relative to the weight of the starch-containing component while avoiding to the extent possible kneading the mixture during mixing,

(b) forming the mixture of step (a) into a web,

(c) steaming said web until said starch therein has an α-conversion degree of at least 93% as measured by the diastase enzyme process,

(d) subjecting the steamed web to preliminary drying to adjust the water content of said web to 15–35% by weight,

(e) shaping said web into individual noodles, and then

(f) further drying said individual noodles until the water content of said noodles is reduced to at most 10% by weight relative to the weight of the noodles thus dried.

4,243,690

INSTANT-COOKING DRY MACARONI AND LIKE DRY FOODS AND A METHOD OF THEIR MANUFACTURE

Sanpei Murakami, Osaka; Sadao Kokeguchi, Ibaragi; Hiroshi Takahashi, Suita, and Ken Okada, Osaka, all of Japan, assignors to Kanebo Foods Ltd., Tokyo, Japan

Filed Jan. 16, 1979, Ser. No. 3,934
Claims priority, application Japan, Jan. 19, 1978, 53/4865
Int. Cl.[3] A23L *1/16*
U.S. Cl. 426—557 20 Claims

1. A method of manufacturing instant-cooking dry macaroni products, comprising the steps of:

(a) preparing a mixture containing from 25 to 35% by weight of water by mixing, with substantially no kneading, a starting material consisting essentially of a starch-containing component selected from wheat flour and wheat flour with other grain powders, starch or both and of water; then

(b) subjecting the mixture of step (a) to a preliminary steaming step until said starch attains an α-conversion degree of from 60% to 80% as measured by the diastase enzyme process; then

(c) shaping the resulting material into individual molded pieces of a desired configuration; thereafter

(d) subjecting the molded pieces to a further steaming step until said starch attains an α-conversion degree of at least 90%; and then

(e) drying the steamed, molded pieces of step (d) until the water content of the molded pieces is reduced to at most 10% by weight relative to the weight of the molded pieces thus dried.

4,243,691
SODIUM-FREE SALT SUBSTITUTE

Marvin J. Mohlenkamp, Jr, Cincinnati, and George D. Hiler, Harrison Township, Montgomery County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 18, 1979, Ser. No. 40,353

Int. Cl.³ A23L *1/237*

U.S. Cl. 426—649 **18 Claims**

1. An edible, substantially sodium-free salt substitute, comprising:

(a) about 2% to about 6% by weight of a 5'-nucleotide component selected from the group consisting of 5'-nucleotide free acids, physiologically acceptable non-sodium salts of said acids, and mixtures thereof;

(b) about 10% to about 40% by weight of a potassium phosphate component;

(c) about 5% to about 20% by weight of a sugar component;

(d) about 15% to about 50% by weight of potassium chloride; and

(e) about 10% to about 40% by weight of an amino acid mixture having the flavor-enhancing characteristics of hydrolyzed vegetable protein.

4,243,692
PROCESS FOR THE PRODUCTION OF SILICIC ACID HETEROPOLYCONDENSATES USEFUL AS COATING MATERIALS

Horst Scholze, Würzburg, and Helmut Schmidt, Höchberg, both of Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 27, 1978, Ser. No. 973,559

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1977, 2758414

Int. Cl.³ C08G *77/56*

U.S. Cl. 427—2 **23 Claims**

1. A process for the production of a silicic acid heteropolycondensate, comprising: simultaneously condensing

(a) at least one substituted silane corresponding to the general formula

$$SiR_nR''_{(4-n)} \quad (I)$$

in which R is selected from the group consisting of hydrogen, halogen, alkoxy and $-NR'_2$, wherein R' is hydrogen and/or lower alkyl, R'' is selected from the group consisting of alkyl, alkenyl, aryl and aralkyl and n is an integer of from 1 to 3;

(b) at least one functional silane corresponding to the general formula

$$SiR_n(R''' Y)_{(4-n)} \quad (II)$$

in which R is as defined above, R''' is selected from the group consisting of alkylene, phenylene, alkyl phenylene and alkylene phenylene; Y is selected from the group consisting of halogen, amino, anilino, aldehyde, keto, carboxy, hydroxy, mercapto, cyano, hydroxyphenyl, diazo, carboxylic acid alkyl ester, sulphonic acid ($-SO_3H$) and phosphoric acid ($-PO_3H_2$) groups and n an integer of from 1 to 3;

(c) at least one hydrolyzable silicic acid derivative corresponding to the general formula

$$SiR_4 \quad (III)$$

in which R is as defined above, with the proviso that not all the radicals R are hydrogen; and

(d) optionally at least one compound selected from the group consisting of substantially involatile oxides of elements selected from the group consisting of Groups Ia to Va, IVb and Vb of the Periodic System and compounds of elements selected from the group consisting of Groups Ia to Va, IVb and Vb of the Periodic System which form a substantially involatile oxide in the presence of at least the quantity of water stoichiometrically required for hydrolysis and in the presence of a condensation catalyst and/or a solvent, the quantities in which said components (a) to (d) are used being selected in such a way that the silicic acid heteropolycondensate formed contains, based on oxide units from 60 to 90% by weight of said component (a), from 1 to 15% by weight of said component (b), from 1 to 30% by weight of said component (c) and from 0 to 40% by weight of said component (d), thereby producing a relatively nonporous coating containing a quantity of reacting coupling sites sufficient to fixedly attach a biological, chemical or biochemical material thereto.

4,243,693
METHOD AND COMPOSITION FOR THE PRESERVATION OF PLANTS

Sven B. L. Nordh, Manskensgatan 51, S-260 35 Ödakra, Sweden

Filed May 30, 1979, Ser. No. 43,630

Int. Cl.³ A01G *5/06*; A01N *1/00, 3/00*

U.S. Cl. 427—4 **25 Claims**

1. In a method for preserving a living plant with a mixture of glycerin and water, the improvement wherein:

(a) the mixture has a volume ratio of glycerin to water of approximately from 18:82 to 35:65;

(b) the mixture has a tartrazine concentration of at least 2 grams per liter;

(c) the mixture is maintained at a temperature of from 15° to 33° C.;

(d) the living plant is maintained at a temperature of from 15° to 33° C. in air having a relative humidity of at most 60 percent during the method.

4,243,694
JET INK PROCESS AND INK COMPOSITION FLUORESCENT IN ULTRAVIOLET LIGHT

Ishwar R. Mansukhani, Neenah, Wis., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Jun. 26, 1978, Ser. No. 919,228

Int. Cl.² B05D *1/04*

U.S. Cl. 427—14.1 **6 Claims**

1. A process for information recording comprising producing a fine jet of colorless aqueous liquid containing at least one resin and at least one dye which is invisible in ordinary light, directing the jet of colorless liquid onto a recording medium, modulating the density of the applied jet by an electric field in accordance with the information to be recorded, thereby recording said information, and subsequently applying steam to said recorded information.

4,243,695
DOUBLE MASK RASTER METHOD FOR APPLYING SLURRY IN A DISCRETE PATTERN

Rolf Wengert, Munich, and Wilhelm Huber, Goldach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 30, 1979, Ser. No. 7,837

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804127

Int. Cl.³ H01J *9/227*

U.S. Cl. 427—14.1 **13 Claims**

1. A method for applying a plurality of different slurries to a glass television picture screen comprising the steps of:

maintaining a base mask having a plurality of apertures immovably in position adjacent the glass screen;

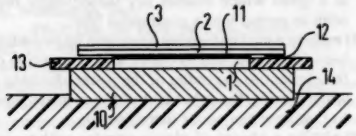
placing a second mask associated with a slurry to be applied over said base mask, said second mask having a plurality of apertures which is less than the plurality of apertures in said base mask;

aligning the apertures in said second mask with apertures in said base mask;

applying a slurry evenly over said second mask;

rinsing away excess slurry;

removing said second mask;
repeating said method with a second mask associated with



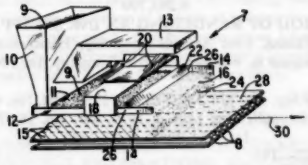
each slurry to be applied, each said second mask having apertures therein which do not overlap apertures in masks associated with other slurries.

4,243,696

METHOD OF MAKING A PARTICLE-CONTAINING PLASTIC COATING

William L. Toth, Trumbull, Conn., assignor to W. S. Rockwell Company, Fairfield, Conn.

Continuation of Ser. No. 788,264, Apr. 18, 1977, abandoned.
This application Jan. 22, 1979, Ser. No. 5,379
Int. Cl.³ B05D *5/02, 1/28, 1/30, 3/02*
U.S. Cl. 427—27 **12 Claims**



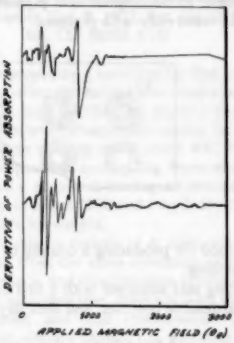
1. The method of making particulate matter-containing plastic coatings upon articles for producing a coating selected from the group consisting of anti-slip coatings, reflective coatings and electrical insulating coatings comprising the steps of:
preparing the surface of the articles by cleansing and etching,
mixing dry powdered resin and dry particulate matter together with each other before application to the prepared surfaces of the articles,
said dry powdered resin being a finely divided grade of resin powder selected from the group consisting of free-flowing fluidizable bed grade or electrostatic powder spraying grade,
said particulate matter being selected from the group consisting of alumina grit, silicon carbide grit, silica sand grit, glass particles, quartz grit, and fiberglass particles less than one-eighth of an inch long, and mixtures thereof,
said dry particulate matter having a particle size in the range from No. 50 to No. 100 grit size,
the loading of the dry particulate matter in said mixture being in the range from 5 to 14 parts by weight of the particulate matter per part of the dry powdered resin,
advancing said dry mixture of resin and particulate matter along a trough having a downwardly inclined wide, flat bottom surface terminating in a cascade lip,
levelling the advancing dry mixture in said trough to a predetermined uniform thickness before the advancing mixture reaches said cascade lip,
allowing said dry mixture of uniform thickness to cascade over said lip,
moving the prepared articles beneath said cascade lip and allowing the cascading dry mixture to fall directly onto the prepared surface of each article,
providing a vertical spacing between said cascade lip and the prepared surfaces of the articles to be coated which is in the range from approximately $\frac{1}{8}$th to $\frac{1}{4}$ of an inch, and
adhering the dry mixture to the article by heating for forming a trough, durable coating having a thickness of from approximately 30 mils to 80 mils.

4,243,697

SELF BIASED FERRITE RESONATORS

Howard L. Glass, Orange; Jiin-Herny W. Liaw, and Tsutumo Kobayashi, both of Placentia, all of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 14, 1979, Ser. No. 20,299
Int. Cl.³ C04B *35/26;* **H01F** *1/10;* **B05D** *5/12*
U.S. Cl. 427—47 **1 Claim**



1. A method for preparing an M-type, self-biased, hexagonal ferrite resonator composed of single crystals of barium hexaferrite on a spinel substrate which comprises the steps of:
A. forming a homogenized, supersaturated melt composition by dissolving a solute composed of a mixture of Ba O, Fe_2O_3 and ZnO into a molten flux composed of Ba CO_3 and B_2O_3 in which the mole ratio of $B_a CO_3$: B_2O_3 is 1.75, the mole ratio of Fe_2O_3: ($B_a CO_3 + B_2O_3$) is 0.164, and the mole ratio of Zn O: Fe_2O_3 is 0.100;
B. maintaining said melt composition at a temperature of from about 911° C. to 921° C. while simultaneously immersing a Mg (In, Ga)$_2O_4$ spinel substrate into said melt composition for a period of time sufficient to effect the deposition on the surface of said substrate of barium hexaferrite single crystals that are substantially free of defects which can act as nucleation sites for magnetic domains;
C. subjecting said single crystals to a magnetic field that is directed along the easy axis of anisotropy of said crystals and of sufficient magnitude to produce magnetic saturation in said crystals; and
D. reducing said magnetic field to zero to produce single crystals capable of being maintained in a metastable state of magnetic saturation with zero applied field.

4,243,698

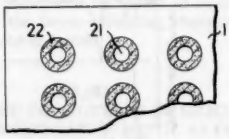
METHOD FOR PRODUCING A PIGMENT COATING

Otto Marzel, Illerrieden; Wilhelm Schwedes, Ulm-Ermingen, and Alfred Wilhelm, Ulm, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 13, 1979, Ser. No. 65,882
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835432
Int. Cl.³ B05D *1/32, 1/38;* **C09K** *11/06, 11/08*
U.S. Cl. 427—157 **21 Claims**

1. A method for producing a coating of pigment on a substrate, comprising:

(a) providing said substrate with a first coating of a chemically hardenable polymer, and then drying said first coating;
(b) contacting said dried first coating with a hardening agent compatible with said polymer in an amount sufficient to completely harden said polymer and to leave excess hardening agent on the surface of said polymer;
(c) subsequently providing said first coating with a second coating comprising a polymer which is compatible with said agent and a pigment suspended therein, such that a portion of said second coating is hardened by said excess agent;
(d) removing the non-hardened portion of said second coating; and
(e) heating the coated substrate for a time and at a temperature sufficient to pyrolyze said hardened polymer, but insufficient to decompose said pigment, to leave a substrate covered only with pigment.



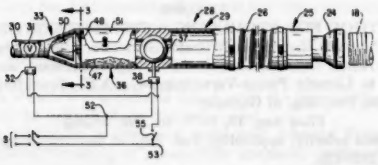
12. A method for producing a coating of pigment on a substrate, comprising:
(a) providing said substrate with a first coating of a chemically hardenable polymer, and then drying said first coating;
(b) contacting said dried first coating with a hardening agent compatible with said polymer in an amount sufficient to completely harden said polymer and to leave excess hardening agent on the surface of said polymer;
(c) subsequently providing said first coating with a second coating comprising a polymer which is compatible with said agent and an organic or organometallic pigment suspended therein, such that a portion of said second coating is hardened by said excess agent;
(d) removing the non-hardened portion of said second coating; and
(e) drying the coated substrate at a temperature of about 100° to 150° to remove solvent components.

4,243,699

METHOD OF POWDER COATING THE INSIDE OF PIPES WITH A CONTINUOUS FILM OF PLASTIC MATERIAL

Jack E. Gibson, 4905 Pepperidge Pl., Odessa, Tex. 79762

Filed Dec. 20, 1977, Ser. No. 862,261
The portion of the term of this patent subsequent to May 16, 1995, has been disclaimed.
Int. Cl.³ B05D *1/12, 3/02*
U.S. Cl. 427—183 **14 Claims**



1. Method of powder coating the interior of a tubular element with a synthetic plastic resin material comprising the steps of:
(1) preheating the element to a temperature in excess of the fusion temperature of a plastic resin powder;
(2) rotating the preheated element about its longitudinal axis at a speed which enables any subsequently fused plastic resin to spread into a continuous film;
(3) making a pocket-forming apparatus by providing a chamber with an inlet and an outlet; and, connecting one end of the element to the outlet of the pocket-forming apparatus while leaving the other end of the element unobstructed so that flow can occur therethrough;
(4) placing a charge of plastic powder within said pocket-forming apparatus; said charge being slightly in excess of the amount of plastic required to uniformly coat the entire interior of said tubular element in a single pass of the charge through the element;
(5) forming a pocket of plastic powder which is smaller in volume than the interior of said element and forcing said pocket into the interior of said element by flowing a stream of compressible fluid through the inlet of said pocket-forming apparatus to simultaneously move the entire charge from the chamber into said element, thereby coating the interior of said preheated, rotating element in a single pass;
(6) said pocket, as it flows through the interior of said element, is limited to a length which is less than the length of said tubular element.

4,243,700

METHOD OF RENDERING AN INK STRIPPABLE

John R. Piazza, East Amwell Township, Hunterdon County, N.J., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 879,324, Feb. 21, 1978, Pat. No. 4,157,936. This application Mar. 7, 1979, Ser. No. 18,378
Int. Cl.³ B05D *3/12, 1/36*
U.S. Cl. 427—195 **12 Claims**

1. A method of rendering an ink, selected from the group consisting of an oil-modified alkyd ink and a drying oil vehicle ink, strippable from a surface upon which it is applied, dried, and stripped which comprises:
(a) applying the ink;
(b) prior to the drying of the applied ink, applying thereto a modifying powder comprising a petroleum resin;
(c) fusing said modifying powder which overlies said ink; and
(d) stripping the resultant fused coat.

4,243,701

PREPARATION OF GAS SEPARATION MEMBRANES

Robert L. Riley, La Jolla, and Richard L. Grabowsky, Bakersfield, both of Calif., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 31,910, Apr. 20, 1979, abandoned, which is a continuation-in-part of Ser. No. 855,096, Nov. 25, 1977, abandoned. This application Nov. 8, 1979, Ser. No. 92,382
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—244 **11 Claims**

1. A process for the production of a membrane for the separation of gases which comprises forming a thin film of a non-porous semi-permeable membrane selectively permeable to glass having a thickness in the range of from about 250 Angstroms to about 10,000 Angstroms directly on the surface of a porous support member by passing one finely porous surface of said porous support member through a solution of a halogenated hydrocarbon solvent containing a semi-permeable membrane forming prepolymer and a cross-linking agent, withdrawing the coated porous support member from said solution, and thereafter cross-linking said prepolymer by treatment at an elevated temperature to form the resultant membrane comprising said porous support member coated with a thin film of a semi-permeable membrane.

4,243,702

HEAT FUSIBLE POLYESTER AND POLYAMIDE DISPERSIONS

Robert M. Walsh, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jun. 29, 1979, Ser. No. 53,450
Int. Cl.[3] B05D 5/00; C08L 93/04; C09D 11/08
U.S. Cl. 427—256 20 Claims

1. A composition of matter in paste form comprising discrete solid particles of a thermoplastic polymeric material selected from polyesters and polyamides having a crystallinity below about 20%, a glass transition temperature or crystalline melting point above room temperature and a particle diameter between about 0.5 micron and about 50 microns, said discrete solid particles of polymeric material being dispersed in a tackifying, cohesion-increasing material whose softening point is at or below room temperature, said polymeric material and said cohesion-increasing material being present in said composition in a ratio of polymeric material to cohesion-increasing material of between about 1:6 to about 1:1.

19. A process comprising printing onto the surface of a substrate a composition in paste form comprising (1) a colorant, (2) discrete solid particles of a thermoplastic polymeric material selected from polyesters and polyamides having a crystallinity below about 20%, a glass transition temperature or crystalline melting point above room temperature and a particle diameter between about 0.05 micron and about 50 microns, and (3) a tackifying, cohesion-increasing material whose softening point is at or below room temperature, said polymeric material and said cohesion-increasing material being present in said composition in a ratio of polymeric material to cohesion-increasing material of between about 1:6 to about 1:1 and heating the surface of the substrate for a length of time at a temperature sufficient to fuse the composition.

4,243,703

PESTICIDE-CONTAINING PLASTIC COVERINGS FOR AGRICULTURAL CULTIVATIONS, AND PROCESS FOR OBTAINING SAID COVERINGS AND FOR PROTECTING THE CULTIVATIONS FROM INFESTANT PESTS

Attilio Palvarini, Menaggio; Simone Lorusso, S. Giuliano Milanese, and Angelo Longoni, Milan, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Continuation of Ser. No. 783,270, Mar. 31, 1977, abandoned. This application Dec. 11, 1978, Ser. No. 968,565
Claims priority, application Italy, Apr. 1, 1976, 21835 A/76
Int. Cl.[3] B05D 5/00; A01G 13/02; B32B 33/00
U.S. Cl. 427—276 4 Claims

1. Method for protecting agricultural cultivations from infesting pests, which method consists in covering the cultivations with films of plastic material containing, in the surface facing the cultivation at least one pesticide in quantities corresponding to from 0.2 to 10 kg/ha of soil covered for each pesticide used and in a form such that the pesticide is caused to slowly migrate from the covering film to the cultivation and the soil in which it is grown.

4,243,704

AUTODEPOSITION COATING PROCESS

Wilbur S. Hall, Plymouth Meeting, and Harry M. Leister, Ambler, both of Pa., assignors to Amchem Products, Inc., Ambler, Pa.

Continuation-in-part of Ser. No. 608,967, Aug. 29, 1975, abandoned. This application Feb. 17, 1978, Ser. No. 878,863
Int. Cl.[3] B05D 3/02, 1/18
U.S. Cl. 427—327 3 Claims

1. In an autodepositing coating process wherein an acidic aqueous solution having coating forming organic resin particles dispersed therein is applied to a worked or roughened ferrous metal surface by immersing said surface in a coating bath containing said solution to produce on the surface a coating which increases in thickness during the time the surface is immersed in the solution, the rate at which the coating increases in thickness being greater at high temperatures, and wherein the coating is fused to form a film having surface defects including pinholes and craters; the improvement comprising carrying out the coating process by maintaining the temperature between about 65° F. and about 75° F. by cooling the coating composition by means of a heat exchanger immersed in the bath or surrounding the bath only at times when the temperature has a tendency to rise thereby to eliminate pinholes and craters in the fused coating.

4,243,705

PROCESS FOR COATING HIGH SOLIDS COATING COMPOSITIONS

William J. Yapp, Park Forest, and Robert E. McDonald, Calumet City, both of Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 577,830, May 15, 1975, Pat. No. 4,169,825. This application Dec. 8, 1977, Ser. No. 858,914
Int. Cl.[3] B05D 3/02
U.S. Cl. 427—386 5 Claims

1. A method for preparing a hard flexible film on a substrate which comprises coating the substrate at temperatures ranging up to about 250° F. with an effective amount of a high-solids coating composition and subsequently curing the coated substrate at temperatures ranging up to about 400° F.; said high-solids coating composition comprising from about 50 to 80 parts by weight of a polyester having an average molecular weight ranging up to about 1200 and a hydroxy content ranging from 2.0 to 12% by weight,

about 10 to 40 parts by weight of at least one crosslinking agent selected from the class consisting of lower alkoxy methyl melamines, and condensation products of an aldehyde with an aminotriazine, aldehyde with urea, aldehyde with guanamine and said condensation products alkylolated with alcohol having 1 to 4 carbon atoms,

about 2.0 to 10 parts by weight of a polyepoxide,

about 2.0 to 8.0 parts by weight of a copolymer obtained by copolymerizing styrene or an alkyl-substituted styrene with at least one hydroxy compound selected from the class consisting of hydroxyalkyl acrylates and allyl alcohol,

and up to about 5.0 parts by weight of an acid catalyst.

4,243,706

ONE PACKAGE STABLE ADHESIVE AND METHOD OF USING THE ADHESIVE

Charles E. Williams, Bloomfield Hills, Mich., assignor to Grow Group, Inc., New York, N.Y.

Filed Sep. 18, 1978, Ser. No. 943,236
Int. Cl.[3] B05D 3/02
U.S. Cl. 427—386 9 Claims

1. A one package adhesive stable at ambient temperature and pressure consisting essentially of;

a. a liquid phase consisting essentially of a polymerizable epoxy resin in the liquid state, an organic plasticizer capable of solubilizing the epoxy resin in an amount sufficient to impart flow to the adhesive; and

b. a solid phase consisting essentially of a carboxy reactive polyvinyl chloride and an effective catalytic amount of the reaction product of a saturated aliphatic polyamine and a saturated aliphatic carboxylic acid or anhydride or an aromatic or cycloaliphatic acid or anhydride.

4,243,707

ADHESION PROMOTER FOR ACRYLONITRILE COPOLYMER LATEX COATINGS

Wayne T. Wiggins, Aurora, Ohio, assignor to Standard Oil Company, Cleveland, Ohio

Filed Jun. 11, 1979, Ser. No. 47,509
Int. Cl.[3] B05D 3/02
U.S. Cl. 427—388.4 4 Claims

1. In the process for coating at least one side of a metal

structure with a layer of a polymer latex and then heating the resulting coating for a short time at a temperature in the range of from 150° to 300° C. wherein the polymer is prepared by the polymerization in aqueous emulsion of 100 parts by weight of

(A) from 60 to 90% by weight of at least one nitrile having the structure

$$CH_2=\underset{\displaystyle R}{\overset{|}{C}}-CN$$

wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

(B) from 10 to 40% by weight based on the combined weight of (A) and (B) of at least one member selected from the group consisting of

(1) an ester having the structure

$$CH_2=\underset{\displaystyle R_1}{\overset{|}{C}}-COOR_2$$

wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,

(2) an alpha-olefin having the structure

$$CH_2=\underset{\displaystyle R''}{\overset{\displaystyle R'}{\overset{|}{\underset{|}{C}}}}$$

wherein R′ and R″ are alkyl groups having from 1 to 7 carbon atoms,

(3) a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers,

(4) vinyl acetate,

(5) styrene, and

(6) indene,

in the presence of from 0 to 40 parts by weight of

(C) a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally a comonomer selected from the group consisting of styrene, a nitrile monomer having the structure

$$CH_2=\underset{\displaystyle R}{\overset{|}{C}}-CN$$

wherein R has the foregoing designation, and an ester having the structure

$$CH_2=\underset{\displaystyle R_1}{\overset{|}{C}}-COOR_2$$

wherein R_1 and R_2 have the foregoing designations, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer,

the improvement comprising including in said polymer latex before it is used for coating the metal surface a complex of a phosphate emulsifier, said emulsifier being a mixture of $R\text{-}O\text{-}(CH_2CH_2O\text{-})_nPO_3M_2$ and $[R\text{-}O\text{-}(CH_2CH_2O\text{-})_n]_2PO_2M$ wherein n is a number of from 1 to 40, R is an alkyl or aralkyl group and preferably a nonyl phenyl group, and M is hydrogen, ammonia or an alkali metal, and at least one member selected from the group consisting of aluminum hydroxide, magnesium hydroxide, calcium hydroxide, zinc hydroxide, and zinc borate.

4,243,708

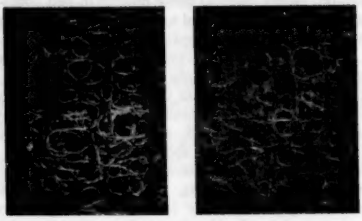
METALLIZED TEXTURED SURFACE POLYPROPYLENE FILM

John W. Eustance, South Glens Falls; Stanley Y. Hobbs, Scotia, and Emilie L. Carley, Hartford, all of N.Y., assignors to General Electric Company, Hudson Falls, N.Y.

Continuation-in-part of Ser. No. 686,834, May 17, 1976, abandoned, which is a division of Ser. No. 554,070, Feb. 28, 1975, Pat. No. 3,964,735. This application Apr. 16, 1979, Ser. No. 30,282

Int. Cl.³ B32B *15/08*

U.S. Cl. 428—141 **12 Claims**



1. A metallized film with improved surface impregnation properties for dielectric fluids which comprises a thin polypropylene film having one predetermined textured surface which is coextensively and uniformly covered by an overlapping pattern of fibroid irregularities comprising predominantly a stretched layer of Type I and Type II crystal structure, said film being characterized by a space factor of greater than about 5% and a haze measurement of greater than about 20%, and said film having an electrically conductive metallic coating on one surface.

4,243,709

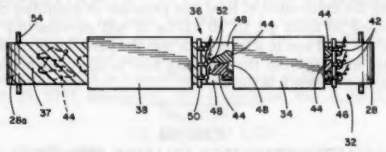
CAMOUFLAGE

Kenneth I. Morton, DeLand, Fla., assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 734,531, Oct. 21, 1976, abandoned. This application Jun. 30, 1978, Ser. No. 920,958

Int. Cl.² B32B *3/10;* **B05D** *1/36, 3/02*

U.S. Cl. 428—195 **12 Claims**



1. A process for preparing a camouflage sheet having a multi-colored surface, comprising the steps of

(a) randomly applying one or more colored plastisol agents in unpredictably irregular shaped patches to a substantially flat surface of a carrier web so that only randomly preselected portions of said web surface are covered by the agents,

(b) overcoating the previously colored patches of said web surface and any uncoated portions of the web with a colored plastisol agent having a color different than the color of the one or more plastisol agents previously applied to the web,

(c) forming the agents into a film characterized by a top

surface having a single color and a bottom surface immediately adjacent the web which is substantially flat and has a randomly distinct, irregular and non-repetitive multi-colored pattern, and

(d) transferring and securing the film to the sheet to be colored so that the single color film surface abuts the sheet surface and the multi-colored pattern is exposed to view.

3. A camouflage comprising an assembly of strips having a colored surface corresponding to the color of the terrain in which the camouflage is to be deployed, said strips being made by a process wherein a continuous multi-colored film having a randomly distinct, irregular and non-repetitive pattern is formed on a carrier web by sequentially applying at least two film-forming plastisol agents of different colors to the surface of the carrier web, the first of said agents being applied in a plurality of unpredictably irregular-shaped patches on the carrier, and the second of said agents being applied to cover the patches of the first applied agent and the remaining portion of the carrier not covered by the patches of the first applied agent, heat curing the agents to form the multi-colored film, and transferring and securing the film to a base sheet to form said strips.

4,243,710

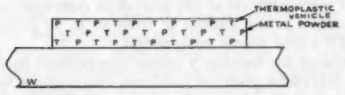
THERMOPLASTIC ELECTRODE INK FOR THE MANUFACTURE OF CERAMIC MULTI-LAYER CAPACITOR

Kenneth H. Magrini, Pittsburgh, Pa., and Raymond B. Jones, Bay Village, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Continuation of Ser. No. 831,251, Sep. 9, 1977, abandoned. This application Dec. 6, 1978, Ser. No. 966,859

Int. Cl.³ H01B *1/02;* **H01G** *4/12;* **B05D** *5/12*

U.S. Cl. 428—208 **4 Claims**



1. A ceramic multi-layer capacitor comprising a plurality of layers of a dielectric substrate having an electrode ink composition diffused thereon, said ink composition consisting of a mixture of metal powders and a thermoplastic vehicle, said powders being a ternary system having a percentage by weight to the ink of 40 percent and which comprises a mixture of 20 parts platinum, 20 parts palladium and 60 parts gold, and wherein the percentage by weight of the vehicle to the ink is 60 percent and comprises a mixture of 68 parts cetyl alcohol, 18 parts spermaceti wax and 14 parts methacrylate resin.

4,243,711

TWO PIECE TRIM STRIP

Brian A. Wenrick, Dayton, Ohio, assignor to Protective Treatments, Inc., Dayton, Ohio

Filed Dec. 12, 1977, Ser. No. 859,749

Int. Cl.³ B32B *3/30, 7/06*

U.S. Cl. 428—31 **10 Claims**

1. A two piece trim strip comprising a soft resilient elongated carrier which, in cross-section, includes a lateral support carrying a pair of forwardly protruding protective rails, one rail on each side of said support, each of said rails being formed with an outwardly extending lateral channel adjustment said lateral support, and an elongated decorative strip adapted to be mounted with its side edges in each of said channels when said

rails are flexed outwardly to facilitate insertion of said decorative strip, said rails extending forwardly of said strip.

4,243,712

SHRINKABLE POLYETHYLENE TEREPHTHALATE FILM

Klaus Hoheisel, and Seigfried Janocha, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 848,685, Nov. 4, 1977, abandoned, which is a continuation of Ser. No. 640,723, Dec. 15, 1975, abandoned. This application Dec. 28, 1978, Ser. No. 973,997

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1974, 2460394

Int. Cl.³ F16L *11/06*

U.S. Cl. 428—35 **7 Claims**

1. A stretched shrinkable film comprising a mixture of polyethylene terephthalate and about 2 to 35 percent by weight of polybutylene terephthalate, said film having a shrinkage which begins below 70° C. and is above 8 percent at 75° C.

5. A film according to claim 1 which is a seamless tubular film stretched in the longitudinal direction and multiaxially at the circumference.

4,243,713

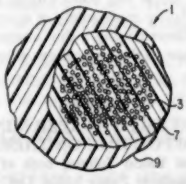
WOVEN FABRIC HAVING A TEXTURED, MULTICOLOR APPEARANCE, AND METHOD OF PRODUCING SAME

James D. Worrall, East Greenwich, and Suzanne M. Auger, Coventry, both of R.I., assignors to Engineered Yarns, Inc., Coventry, R.I.

Filed Nov. 3, 1978, Ser. No. 957,368

Int. Cl.³ B32B *7/00;* **D02G** *3/00*

U.S. Cl. 428—245 **35 Claims**



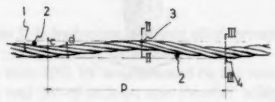
13. A substantially planar fabric having a textured multicolor appearance comprising a plurality of woven threads, each thread comprising a multifilament core yarn, a first plastisol coating surrounding said core yarn, a second plastisol coating, having a different color than said first plastisol coating, around said first plastisol coating and eccentric therewith so as to form relatively thick and thin regions around the first plastisol coating, said first plastisol coating expanding through the thin regions of said second plastisol coating during heat activated foaming of said woven threads to form a textured, multicolor fabric.

4,243,714

STEEL CORD REINFORCEMENT FOR ELASTOMERS AS WELL AS THUS REINFORCED ELASTOMERS

Roger Vanassche, and Germain Verbauwhede, both of Zwevegem, Belgium, assignors to N.V. Bekaert S.A., Zwevegem, Belgium

Filed May 2, 1978, Ser. No. 902,231
Claims priority, application Belgium, Sep. 30, 1977, 859230
Int. Cl.[3] D03D *13/00*; B65G *15/34*
U.S. Cl. 428—258 6 Claims



1. A fabric for reinforcing rubber or elastic materials comprising zig-zag crimped steel cord in the warp direction wherein the crimps of adjacent warp cords lie in phase and within the wavelength p of the crimp deformation and the crimp amplitude c are defined by $0.02p \leqq c \leqq 0.07p$, and wherein k meets the relationship $0.7 \leqq k \leqq 3$ in the expression $10^4 N[\Sigma D^4 \times n_i] = kp^2$ with D_i being the diameter of wires i, n_i being the number of wires i per warp cord and N being the number of warp cords per mm width of the fabric and wherein the steel cord diameter d is chosen between 0.5 mm and 3 mm and wherein $0.25 \leqq N \leqq 1$, the curvature radius of the zig-zag warp cords being at least 1 mm in the crimp crests and troughs, and adjacent warp cords being twisted alternately in S-direction and Z-direction.

4,243,715

METALLIZED AMORPHOUS SILICA FABRIC FOR HIGH TEMPERATURE USE

Mack Gordon, Cleveland, Ohio, assignor to Aerodyne Development Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 928,854, Jul. 28, 1978, abandoned. This application Apr. 27, 1979, Ser. No. 33,953
Int. Cl.[3] B01D *39/08, 39/20*
U.S. Cl. 428—263 11 Claims

1. A fabric for use in bag collectors at high temperatures, consisting of said fabric made solely of amorphous silica fibers and each of said fibers having a thin coating of gold directly covering the surface of the amorphous silica fibers.

4,243,716

THERMAL SENSITIVE PAPER MINIMIZED IN RESIDUE DEPOSITION ON THERMAL HEAD

Takao Kosaka, and Yukio Tahara, both of Takasago, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Jul. 18, 1978, Ser. No. 925,883
Claims priority, application Japan, Jul. 29, 1977, 52-91011
Int. Cl.[3] B41M *5/18*
U.S. Cl. 428—327 4 Claims

1. A heat sensitive paper comprising a support and a heat sensitive layer thereon containing a colorforming lactone compound and color-developing phenol compound, characterized in that a finely divided urea-formaldehyde resin having an oil absorption of 370–380 ml/100 g as measured according to the JIS K-5101 method is incorporated in at least one of the heat sensitive layer, support and between said heat sensitive layer and support.

4,243,717

EXPANDABLE POLYSTYRENE WITH STABILIZED CELL STRUCTURE

Herbert M. Gahmig, Bad Durkheim, Fed. Rep. of Germany, assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Continuation of Ser. No. 964,112, Nov. 27, 1978, which is a continuation of Ser. No. 805,377, Jun. 10, 1977, abandoned. This application Feb. 1, 1980, Ser. No. 117,682
Int. Cl.[3] C08J *9/14, 9/20*
U.S. Cl. 428—402 22 Claims

1. Beads of expandable polystyrene having a diameter of about 0.1 to 5 millimeters and containing 500 to 10,000 parts per million by weight based upon styrene of a Fischer-Tropsch wax having a congealing point of 86° to 110° C. and an amount of n-pentane as a blowing agent effective to permit said beads to be expanded in a first step to a density of 10 to 250 grams per liter, said n-pentane being present in a proportion of 5 to 9 weight percent.

4,243,718

PRIMER COMPOSITIONS FOR SI-H-OLEFIN PLATINUM CATALYZED SILICONE COMPOSITIONS

Bunjiro Murai, and Yasuji Matsumoto, both of Ohta, Japan, assignors to Toshiba Silicone Co. Ltd., Tokyo, Japan

Filed Nov. 24, 1978, Ser. No. 963,490
Int. Cl.[2] B32B *9/04*
U.S. Cl. 428—411 19 Claims

1. A primer composition for adhering silicone compositions to substrates comprising; (a) an epoxy functional silane of the formula $R^1aR^2bSi(OR^3)_{4-(a+b)}$ where R^1 represents an epoxy functional hydrocarbon radical, R^2 and R^3 are alkyl radicals, a has a value of 1 or 2, and b has a value of 0 to 1 and wherein said silane is present at a concentration of 0.5 to 50 weight percent of the total amount of ingredients of (a) to (d); (b) from 0.1 to 50 weight percent based upon the total of ingredients (a) to (d) of an alkenyl-containing organosilicon compound; (c) a vinyl acetate type organic polymer present in the amount of from 0.1 to 50 weight percent of the total amount of ingredients (a) to (d); (d) platinum or a platinum compound, present in the amount of from 0.001 to 1 weight percent of the total weight of ingredients (a) to (d); and (e) an ester-type organic solvent present in the amount of from 60 to 90 percent by weight of the total primer composition.

7. A process for forming a primer composition useful for adhering SiH-olefin platinum catalyzed compositions to various substrates comprising mixing (a) an epoxy functional silane of the formula $R^1aR^2bSi(OR^3)_{4-(a+b)}$, where R^1 represents an epoxy functional hydrocarbon radical, R^2 and R^3 are alkyl radicals, a has a value of 1 to 2, and b has a value of 0 or 1 and wherein said silane is present at a concentration of 0.5 to 50 weight percent of the total amount of ingredients of (a) to (d); (b) from 0.1 to 50 weight percent based upon the total of ingredients (a) to (d) of an alkenyl-containing organosilicon compound; (c) a vinyl acetate type organic polymer present in the amount of from 0.1 to 50 weight percent of the total amount of ingredients (a) to (d); (d) platinum or a platinum compound, present in the amount of from 0.001 to 1 weight percent of the total weight of ingredients (a) to (d); and (e) an ester type organic solvent present in the amount of from 60 to 90 percent by weight of the total primer composition.

13. A laminate of a silicone composition to a substrate comprising (i) a substrate selected from the class consisting of metals, inorganics and plastics; (ii) a primer composition comprising (a) an epoxy functional silane of the formula $R^1aR^2bSi(OR^3)_{4-(a+b)}$ where R^1 represents an epoxy functional hydrocarbon radical, R^2 and R^3 are alkyl radicals, a has a value of 1 or 2, and b has a value of 0 or 1 and wherein said silane is present at a concentration of 0.5 to 50 weight percent of the total amount of ingredients of (a) to (d); (b) from 0.1 to 50 weight percent based upon the total of ingredients (a) to (d) of an alkenyl-containing organosilicon compound; (c) a vinyl acetate type organic polymer present in the amount of from 0.1 to 50 weight percent of the total amount of ingredients (a) to

(d); (d) platinum or a platinum compound, present in the amount of from 0.001 to 1 weight percent of the total weight of ingredients (a) to (d); and (e) an ester type organic solvent present in the amount of from 60 to 90 percent by weight of the total primer composition, and (iii) an SiH-olefin platinum catalyzed composition having as its basic ingredients (1) a vinyl-containing polysiloxane polymer varying from 500 to 30,000,000 centipoise viscosity at 25° C., where the organo groups other than vinyl in the polysiloxane are selected from the class consisting of monovalent hydrocarbon radicals, and halogenated monovalent hydrocarbon radicals; (2) a hydrogen-containing polysiloxane compound having a viscosity varying from 5 to 5,000 centipoise at 25° C., where the organo groups in such polysiloxane are selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, and (3) a platinum catalyst.

19. A process for forming a laminate of a silicone composition with a substrate comprising (i) applying to a substrate selected from the class consisting of plastic substrates and metal substrates a primer composition having therein (a) an epoxy functional silane of the formula $R^1aR^2bSi(OR^3)_{4-(a+b)}$ where R^1 represents an epoxy functional hydrocarbon radical, R^2 and R^3 are alkyl radicals, a has a value of 1 or 2, and b has a value of 0 or 1 and wherein said silane is present at a concentration of 0.5 to 50 weight percent of the total amount of ingredients of (a) to (d); (b) from 0.1 to 50 weight percent based upon the total of ingredients (a) to (d) of an alkenyl-containing organosilicon compound; (c) a vinyl acetate type organic polymer present in the amount of from 0.1 to 50 weight percent of the total amount of ingredients (e) to (d); (d) platinum or a platinum compound, present in the amount of from 0.001 to 1 weight percent of the total weight of ingredients (a) to (d); and (e) an ester organic solvent present in the amount of from 60 to 90 percent by weight of the total primer composition; (ii) evaporating the solvent to form a primer film; (iii) applying over the primer film a silicone composition having therein (1) a vinyl-containing organopolysiloxane polymer having a viscosity varying from 500 to 30,000,000 centipoise at 25° C., where the organo groups other than vinyl are selected from monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals; (2) a hydrogen-containing polysiloxane polymer having a viscosity varying from 5 to 5,000 centipoise at 25° C., where the organo groups other than hydrogen in the polysiloxane are selected from the class consisting of monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals; and (3) a platinum catalyst; and (iv) heating the silicone composition so as to cure it to form a silicone elastomer.

4,243,719

LAMINATES

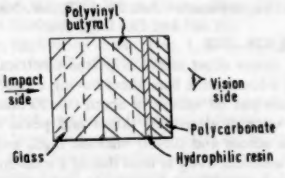
Alan Holmes, Riding Mill, England, assignor to Romag Holdings Ltd., Blaydon-on-Tyne, England

Filed Jan. 29, 1979, Ser. No. 7,762

Claims priority, application United Kingdom, Jan. 30, 1978, 3645/78

Int. Cl.³ B32B *27/36, 27/30, 27/42, 17/10*

U.S. Cl. 428—411 **10 Claims**



1. A reinforced glass laminate, comprising a non-hydrophilic synthetic resin selected from the group consisting of polycarbonates, polysulphones, and polyether sulphones, at least one surface of which has been rendered hydrophilic by bonding thereon a layer of a hydrophilic synthetic polymeric material, a layer of a hydrophilic synthetic resin being bonded to said layer of hydrophilic synthetic polymeric material and a layer of glass being bonded to said layer of hydrophilic synthetic resin.

8. A process for producing a reinforced glass laminate, wherein a non-hydrophilic synthetic resin selected from the group consisting of polycarbonates, polysulphones, and polyether sulphones is coated with a solution capable of forming a layer of a hydrophilic synthetic polymeric material thereon, the solvent medium is then removed, a hydrophilic synthetic resin is placed on the layer of hydrophilic synthetic polymeric material and glass is then placed on the hydrophilic synthetic resin, whereafter bonding together of the layers is achieved either by applying an increased pressure at an elevated temperature or by heating under reduced pressure.

4,243,720

SILICONE COATED ABRASION RESISTANT POLYCARBONATE ARTICLE

Siegfried H. Schroeter, Schenectady, and Daniel R. Olson, Clifton Park, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Nov. 1, 1978, Ser. No. 956,809

Int. Cl.³ B32B *27/36*

U.S. Cl. 428—412 **21 Claims**

1. A shaped non-opaque coated polycarbonate article having improved abrasion and chemical solvent resistance comprising a polycarbonate substrate having deposited on the surface thereof (i) an adhesion promoting primer layer consisting essentially of a thermoplastic substantially non-crosslinked acrylic polymer containing functional groups; and (ii) a tenaciously and uniformly adhered top coat consisting of a thermoset organopolysiloxane disposed on said primer layer.

4,243,721

FLEXIBLE COATING RESINS FROM SILOXANE RESINS HAVING A VERY LOW DEGREE OF ORGANIC SUBSTITUTION

Ronald H. Baney, Midland, and Len A. Harris, Rhodes, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 903,467, May 8, 1978, Pat. No. 4,197,230, which is a continuation-in-part of Ser. No. 863,970, Dec. 23, 1977, abandoned. This application Mar. 28, 1979, Ser. No. 24,638

Int. Cl.³ B32B *27/36;* **G03B** *1/00*

U.S. Cl. 428—412 **12 Claims**

1. An article comprising a solid substrate coated with a pigment-free aqueous coating composition comprising a dispersion of colloidal silica in lower aliphatic alcohol-water or an ether ester of ethylene or propylene glycol-water solution, of the partial condensate of a silanol of the formula $RSi(OH)_3$ in which R is selected from the group consisting of alkyl radicals of 1 to 3 inclusive carbon atoms and phenyl, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, at least 1 weight percent of the silanol being $\phi Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, said composition containing sufficient acid to provide a pH in the range of 2.8 to 6.0.

4,243,722

NON-COLORING, ABRASION RESISTANT, ADHERENT COATING FOR GOLD AND SILVER SURFACES

Loren A. Haluska, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

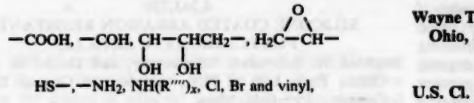
Division of Ser. No. 863,969, Dec. 23, 1977. This application Mar. 28, 1979, Ser. No. 24,637

Int. Cl.[3] B32B *15/08*

U.S. Cl. 428—450 5 Claims

1. An article comprising a solid substrate coated with a pigment-free aqueous coating composition comprising a dispersion of colloidal silica in a lower aliphatic alcohol-water solution, or a dispersion of colloidal silica in an ether alcohol-water solution, of a partial condensate of a mixture of silanols of the formula $RSi(OH)_3$ in which R is selected from the group consisting of alkyl radicals of 1–3 inclusive carbon atoms and R′ wherein R′ selected from $R''(S)_nR'''$- and $(HS)_aR'''$- wherein

R″ is a substituted or unsubstituted monovalent hydrocarbon radical of 1 to 6 carbon atoms wherein the hydrocarbon radical is substituted by radicals selected from the group consisting of



HS—, —NH_2, $NH(R'''')_x$, Cl, Br and vinyl,

n has a value of 1–4 and a has a value of 1 or 2,

R‴ is a divalent or trivalent hydrocarbon radical containing 1–6 carbon atoms,

R⁗ is an alkyl radical of 1–4 carbon atoms,

x is 1 or 2,

at least 50 weight percent of the silanol being $CH_3Si(OH)_3$ and at least 0.4 weight percent of the silanol being R′$Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate, said composition containing sufficient acid to provide a pH in the range of 2.8 to 5.5.

4,243,723

AGENT FOR THE SURFACE TREATMENT OF FLAT INSULATING MATERIALS

Heinz Hacker, Nuremberg, and Ernst Helwig, Bad Neustadt, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 25, 1977, Ser. No. 818,855

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1976, 2634664

Int. Cl.[3] B32B *27/06, 27/34*

U.S. Cl. 428—474.4 7 Claims

1. A method for improving the bonding between an impregnating resin and a flat insulating material having a base comprised of an aromatic polyamide, said method comprising treating said insulating material with a compound of the structure

wherein the radical R_1 contains a reactive group which chemically incorporates into the impregnating resin, said group being selected from the group consisting of a reactive hydrogen atom and an ethylenically or acetylenically unsaturated grouping; and wherein the radicals R_2 and R_3 are selected from the group consisting of a hydrogen atom and alkyl radicals having 6 to 24 carbon atoms, with the proviso that R_2 and R_3 are not both hydrogen atoms.

4,243,724

THERMOPLASTIC MULTI-LAYER FILM

Hans Strutzel; Klaus Hoheisel, and Siegfried Janocha, all of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 26, 1978, Ser. No. 910,143

Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724253

Int. Cl.[3] B32B *27/34, 27/32*

U.S. Cl. 428—474.7 20 Claims

1. A multi-layer film having two or more layers, comprising at least one first layer of a polymer comprising a linear polyamide, and, adjacent to said first layer, at least one second layer of a polymer comprising a major portion of a linear polyamide containing from about 2 to 40 percent by weight of a hydrophilic substance compatible with the polyamide, said hydrophilic substance comprising polyvinyl alcohol.

4,243,725

TIE LAYER FOR CO-EXTRUDED ACRYLONITRILE COPOLYMERS

Wayne T. Wiggins, Aurora, and Frank S. Gerry, Hudson, both of Ohio, assignors to Standard Oil Company, Cleveland, Ohio

Filed Nov. 29, 1979, Ser. No. 99,113

Int. Cl.[3] B32B *27/28, 27/32*

U.S. Cl. 428—517 10 Claims

1. A laminated structure comprising

(I) a first outer layer composed of a nitrile barrier resin,

(II) a second intermediate layer comprising a mixture of

(1) a nitrile barrier resin (I),

(2) a rubber-modified high impact polystyrene, and

(3) a styrene-butadiene-styrene block copolymer elastomer, and

(III) a third outer layer composed of a rubber-modified high impact polystyrene.

6. The co-extrusion process wherein there are adhered together in the molten phase at a temperature in the range of 300° to 450° F. and passed through a shaping die to form a laminate of

(I) a first outer layer composed of a nitrile barrier resin,

(II) a second intermediate layer comprising a mixture of

(1) a nitrile barrier resin (I),

(2) a rubber-modified high impact polystyrene, and

(3) a styrene-butadiene-styrene block copolymer elastomer, and

(III) a third outer layer composed of a rubber-modified high impact polystyrene.

4,243,726

STRUCTURED DONOR SHEET FOR HIGH-RESOLUTION NON-IMPACT PRINTER

Donald J. J. Lennon, Acton, and Roger E. Clapp, Cambridge, both of Mass., assignors to EPP Corp., Boston, Mass.

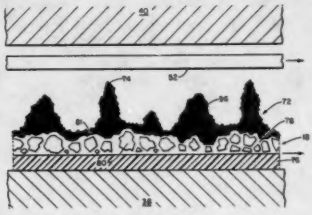
Division of Ser. No. 710,283, Jul. 30, 1976, Pat. No. 4,156,036. This application Jun. 28, 1978, Ser. No. 919,816

Int. Cl.[3] B22F *3/00*

U.S. Cl. 428—545 13 Claims

4. A donor sheet useful in pulsed electrical printing, comprising a conductive base sheet having a microcavernous surface with pits or valleys of about 0.5–50 microns across and 0.5–50 microns deep and ridges and peaks of about 0.5–50 microns across and 0.5–50 microns high, and print particles having a conductivity at least that of a semi-conductor lying in irregular mounds and towers on said surface, said particles being about 0.25–15 microns across and present in quantity sufficient to effect printing by transfer of particles to an adjacent recipient sheet upon imposition of an electrical pulse of about 500 volts for two microseconds, said donor sheet having

a lateral surface D.C. resistivity less than 100,000 ohms per square.



8. A donor sheet as defined by claim 4 wherein the base sheet is metallic and has a metal coating plated thereon, said coating being microcavernous.

4,243,727

SURFACE SMOOTHED TOOL JOINT HARDFACING

Allen E. Wisler, Houston, and Leo D. Lane, Pearland, both of Tex., assignors to Hughes Tool Company, Houston, Tex.

Filed Apr. 25, 1977, Ser. No. 790,795
Int. Cl.³ B22F *7/04*
U.S. Cl. 428—558 **5 Claims**

1. A tool joint for drill pipe used in earth boring operations, the tool joint having annular bands of hardfacing on the exterior, the hardfacing comprising sintered tungsten carbide granules in an alloy steel matrix, the improvement comprising said hardfacing being deposited in a single application by rotating the tool joint while providing an arc between a metal wire and the tool joint to create a weld puddle, and feeding the granules into the weld puddle from an orifice, the application being at a temperature and speed effective to precipitate the granules toward the bottom of the matrix and prevent substantial protrusion of granules from the surface.

4,243,728

DOUBLE-METAL-COATED METAL SULFIDE POWDER AND PROCESS OF PRODUCING THE SAME

Haruki Sato, and Yoshio Kawasumi, both of Urawa, Japan, assignors to Nihon Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 28, 1978, Ser. No. 964,231
Claims priority, application Japan, Dec. 1, 1977, 52-143276
Int. Cl.³ B22F *00/00*
U.S. Cl. 428—570 **17 Claims**

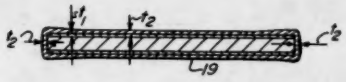
1. A process of producing a double-metal-coated metal sulfide powder, which comprises the steps of forming a platinum group metal layer on metal sulfide particles by thermal decomposition of a plating composition which includes at least one platinum group metal compound containing a radical selected from the class consisting of NO, NO_2, NO_3, and NOCl; and forming an outer layer of at least one metal or alloy selected from the group consisting of iron, copper, nickel and cobalt or an alloy thereof on said metal sulfide particles coated with the platinum group metal layer by adding and mixing the powder of a metal or alloy, less noble than said selected metal or alloy and further adding an acidic solution containing the ions of said selected metal(s) to the mixture obtained in the preceding step while stirring to thereby coat said platinum group metal layer with said selected metal(s) that results from a cementation reaction.

4,243,729

METALLIC HERMETIC SEALING COVER FOR A CONTAINER

Norman Hascoe, Larchmont, N.Y., assignor to Semi-Alloys, Inc., Mount Vernon, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,836
Int. Cl.³ B21C *1/00*; B32B *3/00, 1/04*
U.S. Cl. 428—577 **5 Claims**



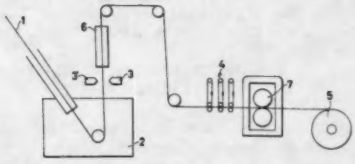
1. A metallic hermetic sealing cover for a container comprising: a metallic plate-like cover element stamped from a continuous sheet having at least one surface plated with a material comprising preponderantly a precious metal of a minimum uniform thickness not exceeding 100 microinches and its side edges electroplated with said material to a thickness which is within the range of 3 to 15 microinches.

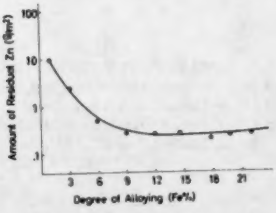
4,243,730

STEEL SHEET HAVING A ZINC COATING ON ONE SIDE

Motohiro Nakayama, Aichi, and Kazutsugu Nakajima, Tokai, both of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 797,737, May 17, 1977. This application Apr. 4, 1979, Ser. No. 27,106
Claims priority, application Japan, May 19, 1976, 51/57611; Nov. 12, 1976, 51/136076; Mar. 23, 1977, 52/31725
Int. Cl.³ B32B *15/00, 15/18*
U.S. Cl. 428—659 **6 Claims**





1. A steel sheet having a zinc coating on one side and a uniformly Fe-Zn alloyed layer on the other side, said alloyed layer being present in an amount corresponding to 0.001 g/m²

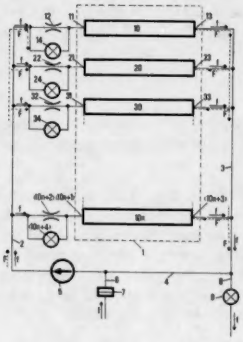
to 1 g/m^2 of Zn and containing from about 6 to 20 percent by weight iron.

4,243,731

METHOD AND DEVICE FOR FEEDING A FUEL CELL WITH FLUID REACTANTS

Jacques Cheron, Maisons-Laffitte, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Nov. 26, 1979, Ser. No. 97,277
Claims priority, application France, Nov. 24, 1978, 78 33505
Int. Cl.^{3} H01M *8/06*
U.S. Cl. 429—13 **10 Claims**



1. A method for feeding with the same fluid a plurality of chambers of a fuel cell block, each of these chambers communicating with a fluid feed pipe and with a fluid discharge pipe, the flow rate of the fluid admitted into each chamber being limited by flow rate control means, comprising at least one step of scavenging at least one chamber with fluid during the operation of the fuel cell, by-passing during a limited time interval the flow regulator associated with said at least one chamber.

4,243,732

CHARGE TRANSFER COMPLEX CATHODES FOR SOLID ELECTROLYTE CELLS

Robert A. Powers, Lakewood, and Demetrios V. Louzos, Rock River, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,846
Int. Cl.^{3} H01M *4/36*
U.S. Cl. 429—105 **11 Claims**

1. A cathode for use in an electrochemical cell comprising a charge transfer complex in which the complex is the reaction product of at least one halogen with mesophase pitch and wherein the donor component is the mesophase pitch and the acceptor component is the at least one halogen.

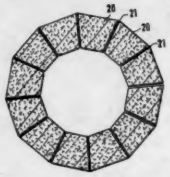
4,243,733

ELECTRODE STRUCTURES

Michael P. J. Brennan, Helsby, England, assignor to Chloride Silent Power Limited, London, England

Division of Ser. No. 861,924, Dec. 19, 1977, Pat. No. 4,176,447. This application Aug. 27, 1979, Ser. No. 70,065
Int. Cl.^{3} H01M *4/00*
U.S. Cl. 429—94 **8 Claims**

1. In an electro-chemical cell, an annular cathodic electrode structure having a porous matrix of electronically-conductive material impregnated with an electro-chemical reactant material which is solid at room temperature and comprising a plurality of segments shaped as elongated members of trapezoidal form in cross-section, each of which segments is joined to at least one of its neighbouring segments along a longer edge of



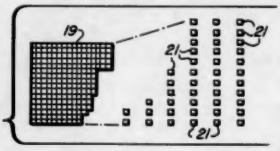
the segment, which edge is an edge defined by the end of the longer parallel side of the trapezoid in cross-section.

4,243,734

MICRO-DOT IDENTIFICATION

George A. Dillon, 1120 E. Beutiful La., Phoenix, Ariz. 85040

Filed Jul. 10, 1978, Ser. No. 923,074
Int. Cl.^{3} G03C *5/08, 5/00*
U.S. Cl. 430—8 **10 Claims**



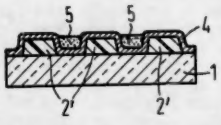
1. In the production and use of micro-dots for owner identification purposes, the method comprising the steps of:
(a) printing a plurality of indicia identifying a particular owner on a plate;
(b) reducing images of said indicia by step-reduction photographic process, terminating with negatives of the images of indicia on a glass slide;
(c) printing said images produced in step (b) on a strip of photographic film;
(d) cutting said strip into individual micro-dots;
(e) immersing said micro-dots in a carrier fluid; and
(f) applying said fluid with the micro-dots suspended therein to goods to be protected.

4,243,735

METHOD OF PRODUCING LIGHT-ABSORBING EDGING ABOUT PHOSPHOR DOTS ON COLOR IMAGE SCREENS

Manfred Kobale, Faistenhaar; Hans-Peter Lorenz, Feldkirchen, and Rolf Wengert, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 15, 1979, Ser. No. 12,348
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806436
Int. Cl.^{3} H01J *29/32, 29/28, 9/227*
U.S. Cl. 430—25 **14 Claims**



1. A method of producing light-absorbing edging of select conductivity on colour image screens, comprising the steps of:

(a) applying a substantially uniform photo-formable coating onto an entire surface area of a glass screen substrate, said coating being formed from a slurry composed of glass-forming substances dispersed in a photolacquer;
(b) developing the so-applied photo-formable coating via photoform techniques to that windows are formed in such coating at areas thereof corresponding to desired locations of color phosphors to be later applied; and
(c) tempering the so-developed coating in a reducing atmosphere at a temperature in the range of 350° to 500° C. so as to attain a light-absorbing edging having windows therein for receiving color phosphors.

4,243,736

LIQUID DEVELOPER AND COPOLYMER POLARITY CONTROL AGENT FOR USE THEREWITH

Heinz Herrmann, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,601
Int. Cl.³ G03G 9/12
U.S. Cl. 430—115 **14 Claims**

1. In a liquid developer for the development of electrostatic charge images, comprising an electrically insulating carrier liquid in which pigments or dyestuffs, resinous binders, a polarity control agent, and conventional additives are dispersed or dissolved,

the improvement that the polarity control agent is a negative charging copolymer which is soluble in the carrier liquid and is composed of 1 to 50 percent by weight of N-vinyl-2-pyrrolidone and 50 to 99 percent by weight of a methacrylic acid ester with an alcohol component which contains at least 6 carbon atoms in a straight or branched chain.

4,243,737

IMAGE FORMING COMPOSITION AND ELEMENTS WITH CO(III) COMPLEX, CONJUGATED π BONDING COMPOUNDS AND PHOTOREDUCTANT

Thap DoMinH, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 627,416, Oct. 30, 1975, Pat. No. 4,075,019, which is a continuation-in-part of Ser. No. 461,172, Apr. 15, 1974, abandoned. This application Nov. 25, 1977, Ser. No. 854,573
Int. Cl.² G03C 1/60, 1/72
U.S. Cl. 430—170 **12 Claims**

1. A radiation-sensitive composition exhibiting upon exposure an internal gain comprising, in admixture,

a compound containing a conjugated π-bonding system capable of forming a tridentate chelate with cobalt(III), said compound being defined by one of the formula:
$Z^2—N=N—Z^3$,
$Z^4—CH=N—NH—Z^5$ or
$Z^6—CH=N—Z^7$
wherein Z^2, Z^3, Z^4, Z^5, Z^6 and Z^7 are independently chosen from anong 2-hydroxy, carboxy or amino substituted naphthyl or phenyl; 2-pyridyl; 2-quinolinyl; 2-thiazolyl; 2-benzothiazolyl; 2-oxazolyl; and 2-benzoxazolyl groups, and are each capable of forming chelate ligands, and

an inert cobalt(III) complex capable of being reduced by a cobalt(II) complex containing said chelating compound, whereby the cobalt(II) converts to a stable cobalt(III) complex,

and a photoreductant capable of forming spontaneously when exposed to activating radiation, or upon subsequent application of heat, a reducing agent capable of reducing said inert cobalt(III) complex,

less than 50 mole percent of any acid anions of said composition being those having pKa values greater than 3.5.

5. An image-forming element as defined in claim 1 wherein said coating is a composite coating comprising two contiguous layers, one of which contains said quinone photoreductant and the other of which contains said cobalt(III)complex and said compound containing said II bonding system.

4,243,738

AMPLIFICATION PROCESS

Paul B. Gilman, Jr., Pittsford, and Jan R. Haase, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 2, 1979, Ser. No. 35,161
Int. Cl.³ G03C 5/32
U.S. Cl. 430—202 **10 Claims**

1. A process for amplifying an imagewise exposure of a photographic element containing an imagewise exposed silver halide emulsion layer having associated therewith a release compound capable of releasing a spectral sensitizing dye as a function of silver halide development, the release compound being selected from the group consisting of ortho and para sulfonamidophenol and naphthol release compounds, nitrobenzene release compounds, quinone release compounds, hydroquinone release compounds and benzisoxazolone release compounds, the process comprising the steps of:

(a) developing the element to release spectral sensitizing dye as a function of silver halide development;
(b) adsorbing the spectral sensitizing dye to undeveloped silver halide grains;
(c) exposing the element overall to radiation from a region of the spectrum which is absorbed by the released spectral sensitizing dye to render developable silver halide grains to which the released spectral sensitizing dye has been absorbed; and
(d) developing silver halide grains rendered developable in step (c).

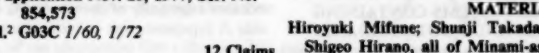
4,243,739

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hiroyuki Mifune; Shunji Takada; Yoshitaka Akimura, and Shigeo Hirano, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

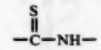
Filed Oct. 11, 1979, Ser. No. 83,750
Claims priority, application Japan, Oct. 12, 1978, 53-125602
Int. Cl.³ G03C 5/30, 1/28
U.S. Cl. 430—266 **30 Claims**

1. A silver halide photographic light-sensitive material having at least one silver halide photographic emulsion layer comprising substantially surface latent image silver halide grains, and containing in said photographic emulsion layer or at least one of other hydrophilic colloid layers a compound represented by the following general formula (I):



(I)

wherein X^1 represents a group containing a

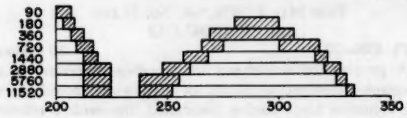


moiety, Ar^1 and Ar^2 each represents a substituted or unsubstituted aromatic group, B represents a divalent linking group, n is 0 or 1, and R^1 represents a hydrogen atom, an unsubstituted alkyl group, or a substituted or unsubstituted aryl group.

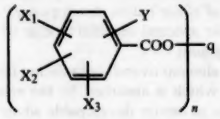
4,243,740
LIGHT SENSITIVE COMPOSITIONS OF POLYMETHYL ISOPROPENYL KETONE

Minoru Tsuda, Isehara; Yoichi Nakamura; Hideo Nagata, both of Samukawa, and Hisashi Nakane, Kawasaki, all of Japan, assignors to Tokyo Ohka Kogyo Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 16, 1979, Ser. No. 21,253
Claims priority, application Japan, Mar. 22, 1978, 53-32501
Int. Cl.[3] G03C *1/68*; C08F *8/00*
U.S. Cl. 430—270 22 Claims



1. A light sensitive composition consisting essentially of (1) polymethyl isopropenyl ketone of a molecular weight of about 10,000–about 1,000,000 and (2) from 0.1 to 50 parts by weight per 100 parts by weight of the polymethyl isopropenyl ketone of a compound having the general formula:



(I)

wherein X_1, X_2 and X_3 independently represent hydrogen atom, an alkyl group, hydroxyl group, an alkoxyl group or a halogen atom, Y represents hydrogen atom or a group having the formula —COOR, R being hydrogen atom or an alkyl group; Q represents hydrogen atom, an alkyl group or a lower hydrocarbon chain which may be substituted with hydroxyl group and n represents an integer of at least 1.

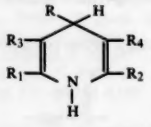
4,243,741
NEGATIVE TONABLE SYSTEMS CONTAINING DIHYDROPYRIDINES AND PHOTOOXIDANTS

Werner Abele, Neu-Isenburg, and Mario Grossa, Dreieich, both of Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 21, 1978, Ser. No. 971,664
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758209
Int. Cl.[3] G03C *1/68*
U.S. Cl. 430—270 12 Claims

1. A negative working photosensitive element for the preparation of negative tonable images which comprises a support bearing a photosensitive layer comprising at least one thermoplastic binder and a photosensitive system, the improvement being that the photosensitive system consists essentially of

I. at least one dihydropyridine compound of the formula



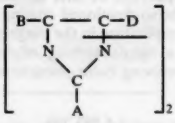
wherein

R is alkyl, alkenyl of 3 to 11 carbon atoms, phenylalkyl, phenylalkenyl, unsubstituted aryl of 6 to 10 carbon atoms or unsubstituted heteroaryl,

R_1 and R_2, which can be the same or different, are alkyl, and

R_3 and R_4, which can be the same or different, are COOR′, COR′, CN, R′ is alkyl; and

II. at least one hexaarylbiimidazole compound of the formula



wherein the radicals A, B and D are either identical or different and are optionally substituted aryl groups derived from carbocyclic or heterocyclic compounds.

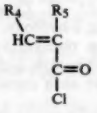
4,243,742
RADIATION-SENSITIVE POSITIVELY ACTING MATERIALS

Jürgen Hersener, and Alfred Wilhelm, both of Ulm, Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

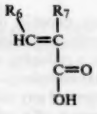
Filed Dec. 26, 1978, Ser. No. 972,801
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2757932
Int. Cl.[3] G03C *1/68*
U.S. Cl. 430—270 15 Claims

1. A radiation-sensitive positively acting material for ultraviolet, electron beam or X-ray lithography, which material comprises a depolymerizable linear non-crosslinked copolymer having side chains of different length and which copolymer consists essentially of monomers A, B, and C, in which monomer A represents one or more compounds of the formula:

monomer B represents a compound of the formula:



and monomer C represents a compound of the formula:



in which R_1, R_2, R_4, R_5, R_6, R_7 are hydrogen atoms, acrylic or aklyl groups and R_3 are ester or ketone groups.

4,243,743

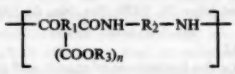
PHOTOSENSITIVE COMPOSITIONS

Hiroo Hiramoto, Otsu, and Masuichi Eguchi, Kyoto, both of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 11, 1979, Ser. No. 29,154
Claims priority, application Japan, Apr. 14, 1978, 53-43288
Int. Cl.[3] G03C *1/68*
U.S. Cl. 430—281 14 Claims

1. A photosensitive composition comprising

(1) a polymer [I] containing a repeating unit [II] of the formula



wherein R_1 and R_2 each comprise a carbocyclic or heterocyclic nucleus; R_3 is selected from the group consisting of hydrogen, an alkali metal ion and an ammonium ion; n is 1 or 2, and $COOR_3$ is located in an ortho or peri position with respect to the amide linkage.

(2) an organic compound [III] having a photo- di- or polymerizable olefinic double bond and an amino radical or a quaternary ammonium salt.

4,243,744

MICROWAVE CURING OF PHOTORESIST FILMS

Harry F. Lockwood, New York, and Thomas F. McGee, Harrison, both of N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 22, 1978, Ser. No. 972,259
Int. Cl.[3] G03C *5/00*
U.S. Cl. 430—325 4 Claims

1. A process for curing at least a portion of a photoresist film which comprises:

(a) applying a photoresist film having a thickness of about 1.4 microns to a surface of a substrate wherein said surface comprises an oxide layer;

(b) curing the film by subjecting the photoresist-coated substrate to microwave radiation of a nominal power of about 400 watts for a period of time ranging about two minutes to about five minutes;

(c) subjecting portions of the photoresist film either to electromagnetic radiation of sufficient intensity or to a beam of appropriately energetic electrons to expose portions of the photoresist film; and

(d) developing the photoresist film to remove portions thereof.

4,243,745

ELECTROLYTIC PRODUCTION OF ACTIVE DIAZINE SPECIES

Michael W. Fry, Ilford, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Apr. 25, 1979, Ser. No. 33,365
Claims priority, application United Kingdom, May 25, 1978, 22729/78
Int. Cl.[3] G03C *5/30*
U.S. Cl. 430—433 9 Claims

1. A process for developing an imagewise exposed photographic material containing in a layer a photosensitive silver halide or silver oxalate which comprises developing said imagewise exposed silver salts in an acid processing solution containing a 1,4-diazine compound reduced at most to the dihydro stage, wherein the said reduced diazine compound is produced during the development process from a 1,4-diazine or a 1,4-diazine-N-oxide by electrolytic reduction.

4,243,746

DISPERSION IMAGING MATERIAL AND METHOD OF PRODUCING IMAGE THEREON

Takeshi Ueda; Shozo Kinoshita, both of Fuji; Kiichiro Sasaguri, Tokyo, and Hidehiko Kobayashi, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 5, 1979, Ser. No. 17,661
Claims priority, application Japan, Sep. 3, 1978, 53/25976
Int. Cl.[3] G03C *5/04, 5/24, 1/76*
U.S. Cl. 430—346 9 Claims

1. A dispersion imaging material comprising a substrate; a sublayer formed on the substrate and having a thickness of 5 A to 200 Å, said sublayer consisting of a member selected from the group consisting of palladium, gold, germanium and combinations thereof, or at least 70% by weight of a member selected from the group consisting of palladium, gold, germanium and combinations thereof, and one or more other metals selected from tin, bismuth, lead, antimony, zinc, aluminum and indium; and a main imaging layer formed on the sublayer and consisting of tin, or at least 50% by weight of tin and a member selected from the group consisting of zinc, aluminum, antimony, indium, lead, bismuth, cadmium and combinations thereof.

4,243,747

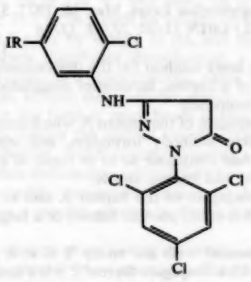
COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Kotaro Nakamura; Keiichi Adachi, and Akira Ogawa, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

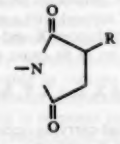
Filed Jan. 17, 1979, Ser. No. 4,134
Claims priority, application Japan, Jan. 17, 1978, 53-3451
Int. Cl.[3] G03C *1/40*
U.S. Cl. 430—551 12 Claims

1. A color photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer containing 2,5-bis(1',1'-dimethylbutyl)hydroquinone or a precursor thereof and a 3-anilino-5-pyrazolone type magenta coupler represented by the following general formula (II):

(II)



wherein IR represents RCONH—, RNHCO—, ROCO—, $RNHSO_2$—, RSO_2NH—



wherein R represents a hydrogen atom, an alkyl group, an alkenyl group or an aralkyl group, which groups can be substituted or unsubstituted.

4,243,748

LIGHT-SENSITIVE SILVER HALIDE REPRODUCTION MATERIAL

Götz Elsner, Schwalbach; Rudolf F. Legler, Rödermark, and Margarete Popovici, Langen, all of Fed. Rep. of Germany, assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

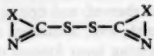
Filed May 29, 1979, Ser. No. 42,938
Int. Cl.[3] G03C 1/06, 1/28, 1/34
U.S. Cl. 430—600 5 Claims

1. A light-sensitive silver halide reproduction material which consists essentially of

a support film,

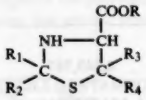
at least one light-sensitive silver halide emulsion layer, and

(a) a disulfide compound of the formula



and

(b) a thiazolidine compound of the formula



wherein X represents the atoms necessary to complete a substituted heterocyclic ring selected from the group consisting of oxazol, thiazol, imidazol, pyrimidine, oxadiazol, thiadizol, triazol, and tetrazol; and R, R_1, R_2, R_3, and R_4 are the same or different, and represent hydrogen, alkyl radicals of 1–4 carbon atoms, and aryl radicals.

4,243,749

IMMUNOASSAY EMPLOYING AN ENZYME LABEL

Dora Sadeh, Tel Aviv, and Charles S. Hexter, Rehovot, both of Israel, assignors to Miles Yeda Ltd., Rehovot, Israel and Hypolab S.A., Coinsins, Switzerland

Filed Mar. 16, 1978, Ser. No. 887,328
Claims priority, application Israel, Mar. 16, 1977, 51667
Int. Cl.[2] G01N 31/00, 31/14, 33/16
U.S. Cl. 435—7 11 Claims

1. A quantitative assay method for the determination of an unknown quantity of a hapten, hereinafter designated hapten X, which method comprises:

a. preparing a conjugate of the hapten X which conjugate is adapted to ellicit antibody formation, and injecting a mammal with said conjugate so as to result in a specific antibody against said hapten, anti-X;

b. preparing a conjugate of the hapten X and of another entity Y, which is either another hapten or a larger molecule;

c. injecting a mammal with the entity Y if it is a larger molecule, or with a conjugate thereof if it is a small molecule which does not by itself ellicit antibody formation, so as to form anti-Y antibodies;

d. preparing a conjugate of an enzyme and the antibody against Y to form enzyme-labelled anti-Y antibody;

e. adsorbing the anti-X antibodies on a solid support;

f. contacting said solid support with a mixture containing the unknown quantity of hapten X and a known quantity of the X-Y conjugate so as to cause all anti-X sites to be occupied;

g. removing unreacted X and X-Y, leaving all anti-X sites occupied;

h. contacting the support carrying occupied anti-X sites with enzyme-labelled anti-Y antibody;

i. contacting the resulting support carrying occupied anti-X-sites and enzyme-labelled anti-Y antibody with a substrate for the enzyme which when acted upon by the enzyme produces a color reaction and measuring the resulting intensity of color so as to determine the quantity of bound enzyme and deducing from calibration curve the quantity of the hapten X.

4,243,750

PROCESS FOR THE HYDROLYSIS OF STARCH AND THE CONTINUOUS FERMENTATION OF THE SUGARS OBTAINED THEREFROM TO PROVIDE ETHANOL

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Filed May 29, 1979, Ser. No. 43,193
Int. Cl.[3] C12P 7/14
U.S. Cl. 435—162 36 Claims

1. A process for the hydrolysis of starch and the continuous fermentation of the fermentable sugars therefrom to provide ethanol which comprises:

(a) liquefying an aqueous slurry of starch in the presence of a liquefying agent selected from the group consisting of strong acid and liquefying enzyme to provide sterile liquefied starch;

(b) saccharifying the sterile liquefied starch in a primary saccharification vessel or vessels in the presence of a saccharifying enzyme to provide an aqueous solution of sterile saccharified starch containing from about 60 to about 80 weight percent of the original starch in the form of fermentable sugar, the remaining portion of the starch being present in the form of partial hydrolysate; and,

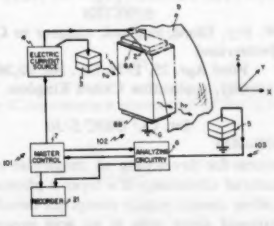
(c) continuously fermenting the fermentable sugar, with or without partial hydrolysate therein having been previously further saccharified in a secondary saccharification vessel or vessels, in a series of fermentation vessels in which the ethanol content of the fermentation medium is progressively increased in each fermentation vessel as the fermentable sugar is consumed therein, the fermentation employing at least two different strains of ethanol-producing yeast, one of which provides a high rate of ethanol production in a fermentation medium containing a relatively low concentration of ethanol and a relatively high concentration of sugar and the other of which provides a high rate of ethanol production in a fermentation medium containing a relatively high concentration of ethanol and a relatively low concentration of fermentable sugar.

4,243,751

ELECTROCHEMICAL PROCESS AND APPARATUS TO CONTROL THE CHEMICAL STATE OF A MATERIAL

Mitchell R. Swartz, Malden, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 636,290, Nov. 28, 1975, Pat. No. 4,139,348.
This application Jun. 1, 1978, Ser. No. 911,625
Int. Cl.[3] G01N 27/26, 27/28, 33/16; A61B 10/00
U.S. Cl. 435—168 30 Claims



8. A system that comprises, in combination: material means that is subjected to a reaction or an environment which effects or tends to effect deterioration thereof by virtue of chemical processes, which deterioration is caused by a reversible reac-

tion which can be counteracted by introducing appropriate charge carriers into the electronic states of said material means, said material means containing small amounts of an electroactive mediator to facilitate introduction of the charge carriers into the electronic states of said material means, said material means containing an enzyme used to effect the chemical reaction or reactions; means to contain the enzyme; means permitting a substrate to come in contact with the enzyme to produce a product; porous means permeable to the substrate and to the product to enable the product to be removed from the region of the enzyme; means to subject the material means to an electric field of sufficiently high intensity to counteract said deterioration and cause the material means to assume or to retain a desired state by the introduction of said charge carriers to said electronic states and yet sufficiently low in intensity and sufficiently high in efficiency that no substantial electrolysis occurs; and means to direct electromagnetic radiation upon the material means to enhance the effect of the electric field in introducing the charge carriers to the electronic states.

4,243,752
PRODUCTION OF INCREASED YIELDS OF CELLULOLYTIC ENZYMES FROM *THIELAVIA TERRESTRIS* AND SEPARATING METHODS THEREFOR

Wilfred A. Skinner, Portola Valley, Calif., and Shigeyuki Takenishi, Nara, Japan, assignors to SRI International, Menlo Park, Calif.

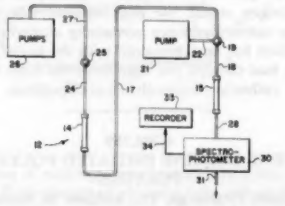
Filed Apr. 9, 1979, Ser. No. 28,500
Int. Cl.³ C12N 9/42
U.S. Cl. 435—209 **4 Claims**

1. A method for increasing the yields of cellulase enzymes from *Thielavia terrestris* whereby there is added from about 0.5% to about 5% of glycerol to the standard media employed to produce said cellulase enzymes.

4,243,753
APPARATUS FOR ENZYME DETECTION

Frederick E. Regnier, West Lafayette, Ind., and Shung-Ho Chang, St. Louis, Mo., assignors to Purdue Research Foundation, West Lafayette, Ind.

Continuation of Ser. No. 674,510, Apr. 7, 1976, abandoned. This application Feb. 27, 1978, Ser. No. 881,577
Int. Cl.² C12M 1/40, 1/34
U.S. Cl. 435—288 **13 Claims**



1. A detection apparatus, comprising:

mixing means for receiving and mixing, in liquid form, a compound having at least one enzyme to be detected and reacting material for said enzyme;

fluid inlet means for receiving, in liquid form, said mixed compound and reacting material from said mixing means;

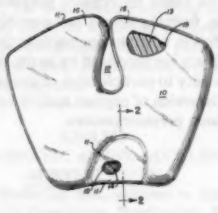
reaction enabling means including a chamber substantially filled with particles the surface of each of which is nonporous and inorganic with said reaction enabling means being connected with said fluid inlet means for receiving said compound and reacting material therefrom in liquid form with the mixture thereof being caused to pass through said chamber of said reaction enabling means in a continuous flow whereby said mixture is brought into containing contact with the surface of said particles while in said chamber and whereby reaction of said enzyme with said reacting material continues for a predetermined period of time, said reaction enabling means providing a reaction product output after said predetermined period of time with said reaction product output having a characteristic indicative of detected enzyme; and

monitoring means connected with said reaction enabling means to receive said output therefrom, said monitoring means responsive to said characteristic in said output providing an indication of said detected enzyme.

4,243,754
VISCOUS, FLOWABLE, PRESSURE-COMPENSATING FITTING COMPOSITIONS

Jack C. Swan, Jr., Boulder, Colo., assignor to Hanson Industries Incorporated, Boulder, Colo.

Continuation of Ser. No. 723,911, Sep. 16, 1976, abandoned, and a continuation-in-part of Ser. No. 663,213, Mar. 2, 1976, abandoned. This application Sep. 5, 1978, Ser. No. 939,400
Int. Cl.² C08J 9/22
U.S. Cl. 521—55 **43 Claims**



1. A viscous, flowable, pressure-compensating fitting composition, which essentially consists of:

a major proportion by weight of a substantially homogeneous, substantially stable, viscous, flowable, continuous phase formed of the combination of wax, which although deformable under pressure, is substantially incompressible and is an essentially non-flowable solid at temperatures below about 110° F., and liquid oil in a weight ratio of about 21.2 to 76.5 parts by weight of wax and about 78.8 to 23.5 parts by weight of oil, and having substantially uniformly distributed therethrough, a minor proportion by weight of a discontinuous phase of discrete, lightweight, hollow, monocellular, sturdy, resilient, resin particles in the form of microbeads having a specific gravity which lowers the overall specific gravity of the fitting composition, which together provide a viscous, flowable and thus deformable, substantially homogeneous, substantially stable, pressure-compensating fitting composition having a specific gravity in the vicinity of about 0.8, or less;

said continuous phase having the combination of wax and oil being present in an amount sufficient (a) to more than merely thinly coat substantially the entire outer surface of essentially each of said microbeads or to more than merely form a film over the surface of essentially each of said microbeads, and (b) to provide a volume that is substantially more than the volume of the interstitial spaces of the quantity of microbeads alone;

said fitting composition being further characterized by having a substantially homogeneous consistency and not substantially changing in volume responsive to ambient temperatures or ambient temperature changes, being resistant to sag, flowing in response and conformance to continuously applied pressure, and flowing under shear stress after its yield point is reached, and, when confined during conditions of use, being resistant to flow in response to instantaneously applied pressure, being virtually resilient in that it is momentarily or slowly, at least in part, recov-

erable from deformation upon or following the relief of deforming pressure loads, and undergoing flow and deformation away from areas of highest pressure loads.

4,243,755

PROCESS FOR THE MANUFACTURE OF REINFORCED POLYURETHANE FOAMS

Matthias Marx, Bad Durkheim; Dietmar Nissen, Heidelberg, and Wolfgang Jarre, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 13, 1979, Ser. No. 93,375

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850610

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—99 **9 Claims**

1. A process for the manufacture of reinforced foamed polyurethane plastics based on organic polyisocyanates, polyols, fillers, catalysts, foaming agents and possibly chain extending agents and additives wherein fine particle dispersions are used as fillers, said fillers are produced by in situ crushing with high local energy density to particle sizes of less than 7 microns and simultaneous dispersion of organic and/or inorganic fillers and polyols or organic polyisocyanates.

4,243,756

STABLE-LIQUID ISOCYANURATE-MODIFIED POLYISOCYANATE COMPOSITIONS

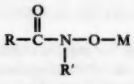
Moses Cenker, Trenton, and Thirumurti Narayan, Grosse Ile, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 27, 1979, Ser. No. 69,729

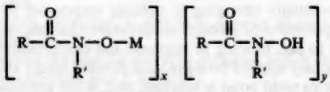
Int. Cl.³ C08G *18/14*

U.S. Cl. 521—125 **10 Claims**

1. A highly stable liquid isocyanurate-modified polyisocyanate composition prepared by heating an organic polyisocyanate at a temperature between 25° C. and 250° C. for a period of from one-half to five hours in the presence of a catalytic amount of an alkali metal or an alkaline earth metal hydroxamate selected from the group consisting of a compound described by the following formula:



wherein R is alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms, phenyl, tolyl, or benzyl, R′ is H, alkyl, alkenyl, or alkynyl containing 1 to 10 carbon atoms, phenyl, tolyl, or benzyl, M is an alkali metal or an alkaline earth metal, and a compound described by the following formula:



wherein R, R′ and M are as defined above, x is 1 and y is any number from 0 to 2.

4,243,757

PROCESS FOR THE PRODUCTION OF ALKALI METAL-CELLULOSE-SILICATES AND THEIR REACTION PRODUCTS

David H. Blount, 5450 Lea St., San Diego, Calif.

Division of Ser. No. 29,202, Apr. 12, 1979, Pat. No. 4,220,757. This application Jan. 15, 1980, Ser. No. 112,290

Int. Cl.³ C08J *9/00*

U.S. Cl. 521—154 **5 Claims**

1. The process for the production of polyurethane-cellulose-silicate cellular solid or solid product by the following steps:

(a) mixing 3 parts by weight of a cellulose-containing plant with 1 to 2 parts by weight of an oxidated silicon compound and 2 to 5 parts by weight of an alkali metal hydroxide,

(b) heating the mixture at 150° C. to 220° C. while agitating for 5 to 60 minutes, thereby

(c) producing a water-soluble alkali metal-cellulose-silicate condensation product;

adding water to produce 10 parts by weight of an aqueous solution, containing 20% to 60% by weight of the alkali metal-cellulose-silicate condensation product, then

(e) mixing the aqueous alkali metal-cellulose-silicate solution with 10 to 100 parts by weight of an isocyanate-terminated polyurethane prepolymer and 0.001 to 0.01 parts by weight of an amine allowed to react, thereby

(f) producing a polyurethane-cellulose-silicate solid or solid product.

4,243,758

PROCESS FOR THE PRODUCTION OF REACTION PRODUCTS USING AQUEOUS FORMOSE WHICH HAS BEEN PREPARED WITH THE USE OF A LEAD CATALYST WHICH LEAD CATALYST HAS BEEN REMOVED FROM THE FORMOSE PRODUCT BY CATHODIC ELECTROCHEMICAL DEPOSITION

Edgar P. Möhring, Bergisch-Gladbach, and Hanns P. Müller, both of Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 934,579, Aug. 17, 1978, Pat. No. 4,175,015. This application May 21, 1979, Ser. No. 41,263

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—158 **4 Claims**

1. In a process for the production of polyurethane resins where polyisocyanates are reacted with compounds containing active hydrogen atoms, the improvement which comprises using as the active hydrogen containing compounds aqueous formose which has been prepared with the use of a lead catalyst, which lead catalyst has been removed from the formose product by cathodic electro-chemical deposition.

4,243,759

TOLUENE DIAMINE INITIATED POLYETHER POLYOLS

James L. Haas, Pittsburgh, Pa., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Division of Ser. No. 946,259, Sep. 27, 1978, which is a continuation of Ser. No. 849,196, Nov. 7, 1977, abandoned. This application Dec. 12, 1979, Ser. No. 103,835

Int. Cl.³ C08L *71/02*; C08G *18/14*

U.S. Cl. 521—167 **2 Claims**

1. In the production of polyurethane foam by reacting an organic polyisocyanate with an active hydrogen containing material in the presence of a blowing agent, the improvement wherein said active hydrogen containing material comprises

(a) from 10 to 100 percent by weight of an adduct obtained by sequentially reacting toluene diamine with from 3 to 5 moles of ethylene oxide and then with from 1 to 5.1 moles of a vicinal alkylene oxide of from 3 to 9 carbon atoms, the total number of moles of ethylene oxide plus vicinal alkylene oxide being at least five and no more than 8.1,

(b) from 0 to 90 percent by weight of an organic material containing from 2 to 8 hydroxyl groups.

4,243,760

REACTION INJECTION MOLDED POLYURETHANE

Kenneth G. McDaniel, Round Rock; Doris M. Rice, and Michael Cuscurida, both of Austin, all of Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed May 23, 1979, Ser. No. 41,837
Int. Cl.[3] C08G *18/14, 18/48, 18/32*
U.S. Cl. 521—176 12 Claims

1. A reaction injection molded polyurethane elastomer having improved moldability and other improved properties comprising the reaction product of an aromatic polyisocyanate, a high molecular weight triol containing an internal mixed propylene oxide-ethylene oxide segment comprising 2–35% by weight of ethylene oxide and 65–98% by weight of propylene oxide and an ethylene oxide cap such that said triol has a primary hydroxyl content greater than 50% and a chain-extending agent.

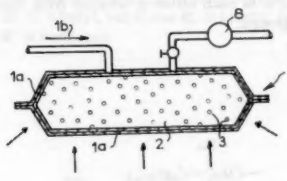
7. A method of making a polyurethane elastomer of improved moldability which comprises injecting via a RIM machine into a mold cavity of the desired configuration a foam formulation and demolding the molded article, said formulation being the reaction product of an aromatic polyisocyanate, a high molecular weight triol containing an internal mixed propylene oxide-ethylene oxide segment comprising 2–35% by weight of ethylene oxide and 65–98% by weight of propylene oxide and an ethylene oxide cap such that said triol has a primary hydroxyl content greater than 50%, and a chain-extending agent.

4,243,761

PANEL FORMED FROM A PHENOLIC RESIN AND A METHOD FOR ITS MANUFACTURE

Claude Savey, 21 Route Nationale, Bersee, Nord, France

Filed Jan. 11, 1979, Ser. No. 2,729
Claims priority, application France, Jan. 16, 1978, 7801947
Int. Cl.[3] B29D *27/04*
U.S. Cl. 521—181 13 Claims



1. A process of making a panel which comprises:

forming a fluid mixture of phenolic resin, a hardening agent, a surface active agent, a finely divided hydrophilic material and a volatile liquid pore forming agent having a boiling point above ambient temperature during mixing and below the polycondensation temperature of said mixture,

uniformly mixing said mixture with solid fillers in particulate form,

partially filling a mould with said fluid mixture with said fillers therein and closing said mould,

progressively raising the temperature of said mixture to a first temperature in the vicinity of the boiling point of said pore forming agent and maintaining said mixture at said temperature to produce maximum expansion of said mixture to fill said mould, and

thereafter progressively raising the temperature of said mixture to a second temperature equal to the polycondensation temperature of said mixture to effect polycondensation of said mixture.

11. A panel made by the method defined in claim 1.

4,243,762

ALKANOLAMINE PROCESSING AID FOR ETHYLENE-VINYL ESTER INTERPOLYMER PARTICLES PRESENT IN AQUEOUS DISPERSIONS THEREOF

Dorothee M. McClain, Cincinnati, Ohio, assignor to National Distillers and Chemical Corp., New York, N.Y.

Filed Feb. 28, 1979, Ser. No. 16,217
Int. Cl.[3] C08K *5/16;* C08L *33/06*
U.S. Cl. 525—6 11 Claims

1. In a process for recovering finely divided ethylene-vinyl acetate interpolymer particles containing at least about 25% by weight, but not more than about 95% by weight, of copolymerized vinyl acetate from aqueous dispersion media in which the particles are present in admixture with a surface active dispersing agent, the improvement which comprises adding an anti-coalescing amount of water soluble alkanolamine processing aid to the said interpolymer particles in said aqueous dispersion media or to the wash water employed in the recovery of said interpolymer particles from said dispersion media and recovering the so-produced interpolymer particles to provide substantially aggregate-free, alkanolamine-wet ethylene-vinyl acetate interpolymer particles.

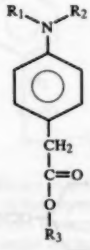
4,243,763

TERTIARY AROMATIC AMINE ACCELERATORS IN ACRYLIC RESIN

Harold Argentar, Rockville, Md., assignor to American Dental Association Health Foundation, Washington, D.C.

Filed Mar. 10, 1978, Ser. No. 885,275
Int. Cl.[2] C08K *3/00;* C08G *63/30;* C08L *67/06;* A61K *5/02*
U.S. Cl. 525—27 14 Claims

1. A composition of matter comprising a polymerizable monomer selected from the group consisting of an acrylate ester and a methacrylate ester, a peroxide catalyst, and a tertiary aromatic amine accelerator having the following structure:

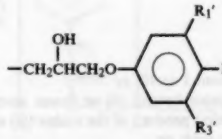


(A)

where R_1 and R_2 are the same or different and are selected from the following groups:

(a) $-CH_3$,

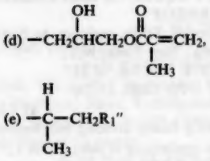
(b) $-CH_2CH_2C_nH_{2n+1}$ with n varying between 0 and 18,



(c)

where R_1', R_2' and R_3' are each either hydrogen, nor-

mal alkyl, $-C_nH_{2n+1}$, with n varying between 1 and 20, or t-butyl, but if one R′ is t-butyl, then the adjacent R′ is hydrogen,

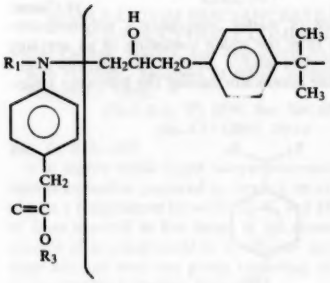


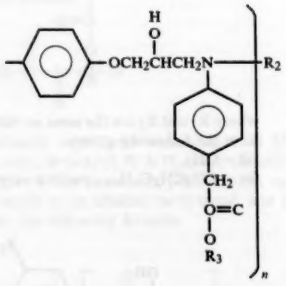
where R_1'' is $-C_nH_{2n+1}$ with n varying from 0 to 17, or

(f) $-CH_2CH_2OH$; or

(B) a polymeric amine having 10 or fewer amine groups which is the reaction product of the amine (A) in which R_1 and R_2 are each hydrogen with the diglycidyl ether of a bisphenol A, or the hydrolysis product of this polymeric amine, in which each of the two epoxide groups is replaced by two hydroxyl groups, one on each carbon; or

(C) a polymeric amine having a chain as in (B) but having terminal amine groups as in (A), where R_1 or R_2 for these terminal groups is as defined in (A), viz.:

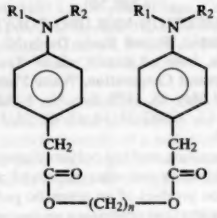




where n varies from 1 to 10; or

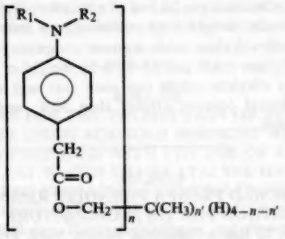
(D) a polymeric amine having 10 or fewer amine groups which is the reaction product of the amine (B) with methacrylic or acrylic acid; or

(E) an amine having the formula



where R_1 and R_2 are as defined in subpart (A) but with no greater than 5 carbon atoms in the alkyl substituents of R_1 and R_2, and where n varies between 1 and 20; or

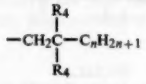
(F) a polymeric amine having the formula



where R_1 and R_2 are as defined in subpart (A) but with no greater than 5 carbon atoms in the alkyl substituents of R_1 and R_2, and where n varies between 2 and 4, and n′ varies between 0 and 4−n;

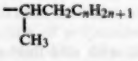
and where R_3 is in each instance selected from one of the following groups:

(1) $-CH_3$,



(2)

where R_4 is hydrogen or methyl and n varies between 0 and 18,



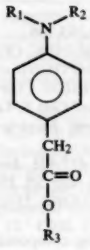
(32)

where n varies between 0 and 17, or

(4) the substituents of subparts (A)(c), (A)(d) and (A)(f), and

(5) in the case of amines as in (A), —H.

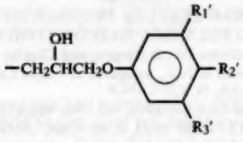
7. A composition of matter comprising an unsaturated polyester, a peroxide catalyst, and a tertiary aromatic amine accelerator having the following structure:



where R_1 and R_2 are the same or different and are selected from the following groups:

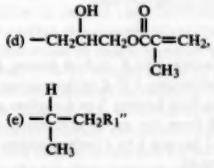
(a) $-CH_3$,

(b) $-CH_2CH_2C_nH_{2n+1}$ with n varying between 0 and 18,



(c)

where R_1', R_2' and R_3' are each either hydrogen, normal alkyl, $-C_nH_{2n+1}$, with n varying between 1 and 20, or t-butyl, but if one R' is t-butyl, then the adjacent R' is hydrogen,



(d)

(e)

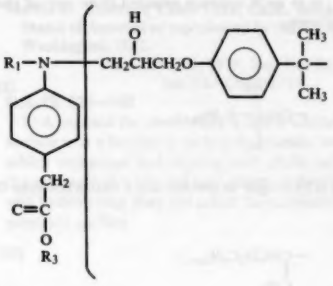
where R_1'' is $-C_nH_{2n+1}$ with n varying from 0 to 17, or

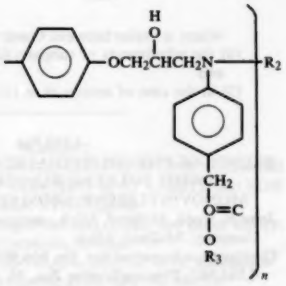
(f) $-CH_2CH_2OH$; or

(B) a polymeric amine having 10 or fewer amine groups which is the reaction product of the amine (A) in which R_1 and R_2 are each hydrogen with the diglycidyl ether of a bisphenol A, or the hydrolysis product of this polymeric amine, in which each of the two epoxide groups is replaced by two hydroxyl groups, one on each carbon; or

(C) a polymeric amine having a chain as in (B) but having terminal amine groups as in (A), where R_1 or R_2 for these terminal groups is as defined in (A), viz.:

(A)

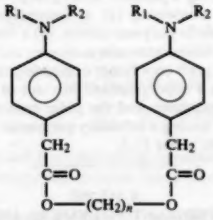




where n varies from 1 to 10; or

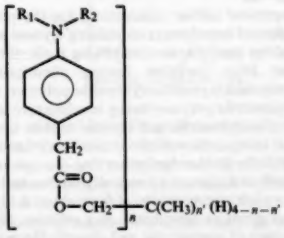
(D) a polymeric amine having 10 or fewer amine groups which is the reaction product of the amine (B) with methacrylic or acrylic acid; or

(E) an amine having the formula



where R_1 and R_2 are as defined in subpart (A) but with no greater than 5 carbon atoms in the alkyl substituents of R_1 and R_2, and where n varies between 1 and 20; or

(F) a polymeric amine having the formula

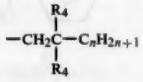


where R_1 and R_2 are as defined in subpart (A) but with no greater than 5 carbon atoms in the alkyl substituents of R_1

and R_2, and where n varies between 2 and 4, and n' varies between 0 and 4−n;

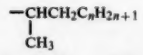
and where R_3 is in each instance selected from one of the following groups:

(1) $-CH_3$,



(2)

where R_4 is hydrogen or methyl and n varies between 0 and 18,



(32)

where n varies between 0 and 17, or

(4) the substituents of subparts (A)(c), (A)(d) and (A)(f), and

(5) in the case of amines as in (A), —H.

4,243,764

BLENDS OF PHENOLPHTHALEIN POLYCARBONATES WITH POLYENE RUBBER-MODIFIED MONOVINYLIDENE AROMATIC COPOLYMERS

John F. Rudd, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 806,990, Jun. 16, 1977, Pat. No. 4,163,762. This application Jun. 15, 1979, Ser. No. 48,953

Int. Cl.³ C08L *67/00*

U.S. Cl. 525—67 **11 Claims**

1. A heterogeneous blend comprising at least about 10 and not more than about 90 weight percent of the following components: (1) a polycarbonate of an ar,ar'-dihydroxytrityl compound and (2) a rubber-modified copolymer of a monovinylidene aromatic monomer and an α,β-ethylenically unsaturated comonomer having a pendant polar group, said rubber-modified copolymer containing (a) an interpolymer of ethylene-higher α-monoolefin polyene rubber, (b) a random copolymer of the monovinylidene aromatic monomer and the polar comonomer and (c) a graft copolymer containing the rubber grafted or blocked with a copolymerized mixture of the monovinylidene aromatic monomer and the polar comonomer, said random copolymer having a solubility parameter within the range from about 9.2 to about 11.2.

4,243,765

IMPACT-RESISTANT POLYMERS AND RUBBER CONCENTRATES THEREFOR

Henno Keskkula, and Frederick A. Miller, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 29, 1976, Ser. No. 755,319

Int. Cl.³ C08F *279/04*

U.S. Cl. 525—86 **6 Claims**

1. An improved rubber concentrate for the preparation of rubber reinforced copolymers containing styrene and acrylonitrile, the rubber concentrate comprising a plurality of grafted diene-rubber latex particles having chemically attached thereto an attached styrene-acrylonitrile polymer, the attached styrene-acrylonitrile polymer being in admixture with a matrix copolymer of acrylonitrile and styrene at least approximating the chemical composition of the attached styrene-acrylonitrile polymer, with the further limitation that the matrix copolymer of acrylonitrile and styrene, chemically unattached to the diene rubber, has an intrinsic viscosity of from about 0.15 to about 0.5 deciliters per gram as determined in a solution of a 2 to 1 by volume mixture of acetonitrile and dimethylformamide at 25° C., and the number average diameter of the diene-rubber particles lie between about 500 Angstroms and 2800 Angstroms and that the ratio of the chemically attached or graft styrene-acrylonitrile polymer to diene rubber lie between about 0.1 and 1.0 with the further limitation that the styrene-acrylonitrile of the attached and chemically unattached polymer contains from about 50 to 75 parts by weight of acrylonitrile and 50 to 25 parts by weight of styrene.

4,243,766

THERMOPLASTIC MOLDING COMPOSITIONS OF VINYL AROMATIC COMPOUND α,β-UNSATURATED CYCLIC ANHYDRIDE COPOLYMERS

Visvaldis Abolins, Delmar, and Gim F. Lee, Jr., Albany, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 477,435, Jun. 7, 1974, Pat. No. 4,124,654. This application Aug. 23, 1978, Ser. No. 935,919

Int. Cl.² C08L *53/02*

U.S. Cl. 525—92 **6 Claims**

1. A thermoplastic molding composition which comprises:

(a) from 40–95 parts by weight of a copolymer of a vinyl aromatic compound and an α,β-unsaturated cyclic anhydride;

(b) from 10–50 parts by weight of a block copolymer of the A'-B'-A' type wherein A' is a polymerized mono-alkenyl aromatic hydrocarbon block and B' is a polymerized conjugated diene hydrocarbon block, the block B' being of higher molecular weight than that of the combined molecular weight of terminal block A'; and

(c) from 5–30 parts by weight of a polyphenylene ether resin.

4,243,767

AMBIENT TEMPERATURE CURABLE HYDROXYL CONTAINING POLYMER/SILICON COMPOSITIONS

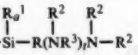
Lawrence G. Kaufman, North Bergen, and Charles N. Merriam, Martinsville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,473

Int. Cl.³ C08F *8/32, 8/42;* **C08C** *19/00*

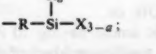
U.S. Cl. 525—102 **41 Claims**

1. A substantially anhydrous, acid-free, room temperature curable composition which comprises (A) an organic thermoplastic polymer containing at least two hydroxyl radicals which are directly bonded to non-carboxylic carbon atoms of said polymer; and (B) a hydrolyzable aminosilicon compound selected from the class consisting of aminosilicon compounds having the average formula



and mixtures thereof wherein:

X is an alkoxy radical having 1 to 6 carbon atoms; R is a divalent alkylene radical having 1 to 4 carbon atoms; R^1 is hydrogen or an alkyl radical having 1 to 4 carbon atoms, R^2 is a radical selected from the group consisting of hydrogen, an alkyl radical having 1 to 4 carbon atoms and a silyl radical of the formula



wherein R. R^1, and X are the same as defined above; and wherein R^3 is a divalent alkylene radical having 2 to 4 carbon atoms; a has a value of 0 to 2 and t has a value of 0 to 4; and wherein said composition contains about 5 to 50 parts by weight of said hydrolyzable aminosilicon compound (B) per 100 parts by weight of said organic polymer (A).

4,243,768

SAG-RESISTANT COMPOSITIONS

Jon H. Simpson, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1977, Ser. No. 783,350
Int. Cl.[3] C08L *75/04, 35/02*
U.S. Cl. 525—127 8 Claims

1. A sag-resistant, pumpable, curable composition comprising an isocyanate-terminated prepolymer dispersed throughout a synthetic, continuous, crosslinked polymer matrix.

4,243,769

COMPATIBILIZATION OF BLENDS AND COMPOSITES

Ervin G. Pritchett, Cincinnati, Ohio, assignor to National Distillers and Chemical Corp., New York, N.Y.

Continuation-in-part of Ser. No. 600,332, Jul. 30, 1975, abandoned. This application Oct. 4, 1977, Ser. No. 839,234
Int. Cl.[3] C08L *23/00, 27/00*
U.S. Cl. 525—222 20 Claims

1. A method for providing a grossly homogeneous, permanently miscible mixture of polymers which has properties not evident in a simple blend of the polymers and which does not separate spontaneously into the component polymers, which comprises uniformly mixing (a) a polymer component containing a nitrile functionality with (b) a polymer component containing hydroxyl or esterified hydroxyl functional groups condensable with nitriles, said polymer components (a) and (b) tending to spontaneously separate from a simple blend thereof, in the presence of from about 0.001 to 8 percent by weight of the mixture of polymers and acid of an acid compatibilizing agent and for a period sufficient to provide the aforesaid permanently miscible mixture of polymers which, at ambient temperature, is in the form of a solid.

4,243,770

CROSS LINKABLE FLUORINE-CONTAINING POLYMER AND ITS PRODUCTION

Masayoshi Tatemoto, Osaka; Takeshi Suzuki, Kyoto; Masayasu Tomoda, Osaka; Yasuyoshi Furukawa, Osaka, and Yutaka Ueta, Osaka, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Apr. 7, 1978, Ser. No. 894,256
Claims priority, application Japan, Apr. 8, 1977, 52-40543
Int. Cl.[2] C08F *14/16, 14/22*
U.S. Cl. 525—331 20 Claims

1. An easily cross linkable free radical catalyzed fluorine-containing polymer substantially comprising: (1) a polymeric chain comprising one or more polymer segments, of which at least one polymer segment consists of units of vinylidene fluoride alone or units of vinylidene fluoride and one or more other fluoroolefins, the content of vinylidene fluoride units being not less than about 10 mol% based on the polymer segment and not less than 10% by weight based on the polymeric chain, and (2) at least one iodine atom liberated from an iodinated compound of the formula: RI_x (wherein R is a saturated or unsaturated fluorohydrocarbon or chlorofluorohydrocarbon residue having 1 to 8 carbon atoms and x is an integer of 1 or 2 corresponding to the bonding valency of the residue R) in an amount of 0.001 to 10% by weight based on the polymer and bonded at a terminal position of the polymeric chain and (3) a fragment of the iodinated compound excluding the said liberated iodine atom therefrom which are bonded to the polymeric chain and being prepared by polymerizing vinylidene fluoride with or without one or more of the other fluoroolefins in the presence of a radical producing source and the iodinated compound (s), the other fluoroolefins being selected from the group consisting of tetrafluoroethylene, chlorotrifluoroethylene, trifluoroethylene, vinyl fluoride, hexafluoropropylene, pentafluoropropylene, perfluoro(methyl vinyl ether), perfluoro(ethyl vinyl ether) and perfluoro-(propyl vinyl ether).

4,243,771

NITRILE RUBBER ADHESION

Martin H. Kaufman, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 19, 1979, Ser. No. 95,866
Int. Cl.[3] C08F *8/12*
U.S. Cl. 525—340 15 Claims

1. A method for converting a dilute nitrile rubber substrate surface into a bondable surface for metals, wood, and rubbers which comprises hydrolyzing said nitrile substrate surface in the presence of a mineral acid under such mild conditions that said hydrolyzing does not affect the unsaturation of said nitrile substrate surface.

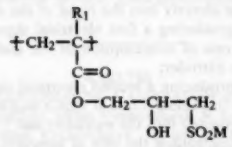
4,243,772

POLYMERS WITH CONTROLLED SULFONIC ACID OR SULFONATE GROUP CONTENT AND A METHOD FOR THEIR SYNTHESIS

Swaraj Paul, Subhash Nagar, Bareilly, India, and Bengt Ranby, Stenbocksvägen 21, Djursholm, Sweden

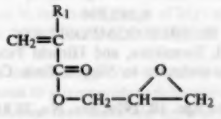
Continuation of Ser. No. 735,494, Oct. 26, 1976, abandoned. This application Nov. 6, 1978, Ser. No. 958,133
Int. Cl.[3] C08F *8/36*
U.S. Cl. 525—344 6 Claims

1. A process for the preparation of polymers with a controlled amount of sulfonic acid or sulfonate groups, said polymers having chain units of the formula:



where M is selected from the group consisting of alkali metal atoms and hydrogen, said process being characterized by the following steps:

A. copolymerizing a monomer selected from the group consisting of ethylene, propylene, vinyl acetate, styrene, acrylonitrile, methyacrylate, and methyl methacrylate by a method known per se with a controlled amount of an epoxy group containing monomer of the formula:



where R_1 is selected from the group consisting of hydrogen and a methyl radical; thereafter,

B. sulfonating via epoxy ring opening by reacting the polymer produced in step a) with an alkali sulfite in aqueous solution at the temperature within the range of 20°–150° C. and in the presence of a tetra, lower alkyl quaternary ammonium salt phase transfer catalyst, and

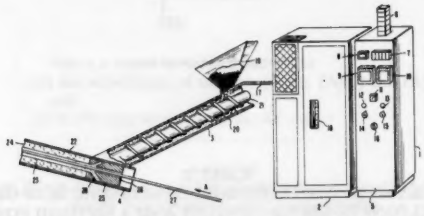
C. when M is hydrogen, passing the sulfonated product through a cationic ion exchange resin.

4,243,773

VOLATILE LIQUID SUPPLY EQUIPMENT AND PROCESSES AND APPARATUS FOR INTRODUCING VOLATILE CROSS-LINKING AGENTS INTO POLYOLEFIN COMPOUNDS AND FOR THE EXTRUSION OF CROSS-LINKING POLYOLEFIN COMPOUNDS

Claude J. Arnaud, Riom; Jean M. Quemner, Clermont-Ferrand, and Gaston P. Roche, Riom, all of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Division of Ser. No. 851,953, Nov. 16, 1977, Pat. No. 4,198,374. This application Jun. 21, 1979, Ser. No. 50,789
Claims priority, application France, Jan. 17, 1975, 75 01432
Int. Cl.[3] C08F *8/06, 8/08;* C08C *19/04*
U.S. Cl. 525—387 3 Claims



1. A method of dispersing and admixing highly volatile, flammable, tertiary butyl peroxide, whose boiling point is approximately 110° C. at 760 mm of mercury pressure, as a cross-linking agent in a polyethylene compound, comprising the steps of:

continuously introducing, at ambient temperatures and under atmospheric pressures, a mass of particulate polyethylene material directly into an input of an extruder;

concurrently injecting at ambient temperatures and under atmospheric pressures, an incremental supply of said liquid peroxide directly into the input of the extruder;

continuously producing a first electrical signal representative of the rate of consumption of the materials passing through the extruder;

continuously producing a second electrical signal representative of the incremental rate at which said liquid peroxide is directly injected into the extruder; and

continuously controlling the rate of injection of said liquid peroxide in accordance with the relative magnitudes of said first and second electrical signals, to assure the flow rate at which said liquid peroxide is injected has a substantially constant correspondence to the rate of consumption of the material through the extruder, so that the percentage of said cross-linking agent to said polyethylene compound in the extruder remains at a substantially constant predetermined value, regardless of extruder speed variations.

4,243,774

RUBBER COMPOSITION

Masaaki Inagami, Kamakura, and Hiroshi Fukushima, Zushi, both of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,818
Claims priority, application Japan, Apr. 13, 1978, 53-43464
Int. Cl.[3] C08L *61/10, 71/02*
U.S. Cl. 525—405 8 Claims

1. A rubber composition capable of giving a vulcanizate having superior adhesiveness, comprising 100 parts by weight of an unsaturated epoxide-copolymerized epichlorohydrin-type rubber, which is a copolymer rubber composed of 25 to 97 mole% of epichlorohydrin, 0 to 60 mole% of ethylene oxide and 3 to 15 mole% of an unsaturated epoxide 0.1 to 5 parts by weight of a di- or tri-mercapto-s-triazine, 1 to 20 parts by weight of a phenolic resin, and 5 to 50 parts by weight of a finely divided silicic acid or its salt.

4,243,775

SYNTHETIC POLYESTER SURGICAL ARTICLES

Michael N. Rosensaft, Monsey, N.Y., and Richard L. Webb, Darien, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 799,836, May 23, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 960,264
Int. Cl.[3] C08L *67/04;* C08G *63/08*
U.S. Cl. 525—415 12 Claims

1. In a method for the manufacture of sterile surgical articles fabricated from a synthetic absorbable copolymer formed by copolymerizing glycolide as the predominant monomer with a cyclic ester monomer other than glycolide, the improvement comprising employing sequential addition of the monomers in the polymerization, wherein said glycolide monomer, said cyclic ester monomer, or a combination of said monomers is substantially completely polymerized before the addition of the other monomer or said combination.

4,243,776

PREPARATION OF NON-THROMBOGENIC POLYMERIC MATERIAL ARTICLE WITH PLATELET ANTI-AGGREGATIVE AGENT

Walter Marconi, San Donato Milanese; Francesco Pittalis; Francesco Bartoli, both of Rome, and Franco Morisi, San Giovanni In Persiceto, all of Italy, assignors to Snamprogetti S.p.A., Milan, Italy

Filed Jun. 21, 1978, Ser. No. 917,568
Claims priority, application Italy, Jul. 27, 1977, 26191 A/77
Int. Cl.[3] C08G *69/46*
U.S. Cl. 525—420 6 Claims

1. A method for rendering an article made from a polymeric material non-thrombogenic comprising chemically binding a platelet anti-aggregative agent selected from the group consisting of 4,5-diphenyl-2-bis-(2-hydroxyethyl)amino oxazole and 4,8-dipiperidino-2,6-diethanolamino-pyrimido-5, 4-d pyrimidine to the surface of said polymeric material.

4,243,777

POLYPYRROLIDONE ALLOYS

W. Alan Sweeney, Larkspur, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 4, 1978, Ser. No. 930,945
Int. Cl.[3] C08L *77/02*
U.S. Cl. 525—425 6 Claims

1. A process for preparing a polymer alloy of poly-2-pyrrolidone and a linear polymer additive selected from the group consisting of polyesters, polyamides and mixtures thereof which comprises dissolving said poly-2-pyrrolidone for about from 2% to 40% by weight, based on total polymer, of said polymer additive in an inert organic solvent, thereby forming a solution of said poly-2-pyrrolidone and said polymer additive in said solvent and coprecipitating, said poly-2-pyrrolidone with said polymer additive from said solvent, thereby yielding an intimate coprecipitate polymer alloy, and wherein said polymer additive has a number average molecular weight of about from 15,000 to 50,000, a melting point of about from 150° to 300° C. and a moisture regain, measured at standard conditions, of from 0.2 to 2.5 %wt.

4,243,778

THERMOSETTING HEAT BONDABLE LACQUER

Peter Heim, Basel; Karl Borer, Grindel, and Werner Allemann, Breitenbach, all of Switzerland, assignors to Schweizerische Isola-Werke, Breitenbach, Switzerland

Filed Jun. 14, 1979, Ser. No. 48,400

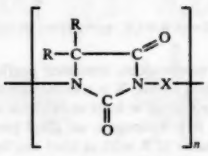
Claims priority, application Switzerland, Jun. 21, 1978, 6765/78

Int. Cl.³ C08G 71/04; C08L 63/00

U.S. Cl. 525—454 17 Claims

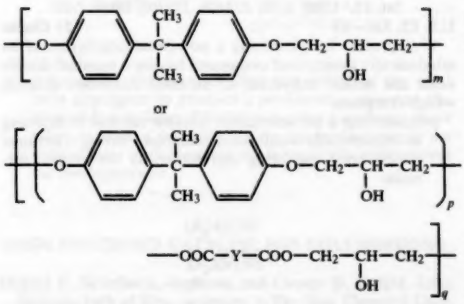
1. Thermosetting heat bondable lacquer which comprises a solution of a theromsetting mixture in a liquid selected from the group consisting of solvents boiling at a temperature in the range of 50° to 230° C. and mixtures of such solvents, said thermosetting mixture consisting of—based on the resin solids—

(a) 20 to 80% by weight of polyhydantoin resin of linear, branched or mixed linear and branched structure and having the formula:



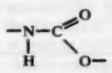
wherein the R's are the same or different and are hydrogen or alkyl radicals containing from 1 to 4 carbon atoms and the X's are the same or different and are selected from the group consisting of aliphatic, cycloaliphatic, heterocyclic and aromatic linkage groups and combinations thereof, and n is a positive number having a value corresponding to the specific viscosity, a one percent solution of the resin in cresol DAB V having a specific viscosity between 0.2 and 1.5 at 20° C.,

(b) 5 to 65% by weight of polyhydroxy polyether or phenoxy resin of linear, branched or mixed linear and branched structure and having the formula:



wherein Y is a linking group selected from the group consisting of bivalent aliphatic, cycloaliphatic, heterocyclic and aromatic groups and combinations thereof, m is a positive number having a value corresponding to the specific viscosity, p is a positive number having an average value of 1 to 30 and q is a positive number with a value corresponding to the specific viscosity, a one percent solution of the resin in cresol DAB V having a specific viscosity between 0.2 and 1.5 at 20° C., and

(c) 3 to 40% by weight of polyurethane resin of linear, branched or mixed linear and branched structure, at least 4% by weight of the resin consisting of the urethane grouping having the formula:



and a one percent solution of the resin in cresol DAB V having a specific viscosity between 0.1 and 1.0 at 20° C.

4,243,779

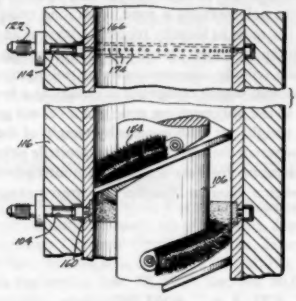
POLYCARBONATES STABILIZED BY HALOHYDROCARBON, HALOCARBON OR SILANE GROUPS

Roy E. McAlister, 5285 Red Rock North, Phoenix, Ariz. 85018

Filed Apr. 23, 1979, Ser. No. 32,633

Int. Cl.³ C08G 63/76; C08L 69/00

U.S. Cl. 525—462 38 Claims



1. A polycarbonate resin having the phenolic hydrogen end atoms replaced by stress corrodant preventive groups which are halohydrocarbon groups, halocarbon groups or a silane groups.

4,243,780

METHOD OF PREPARING CARBAMIDE-FURAN RESIN

Anatoly A. Kruglikov, ulitsa Vyazovskaya, 9, kv. 9; Militina A. Nikolaeva, ulitsa Vyazovskaya, 13, kv. 15, both of, Nizhny Tagil; Jury P. Vasin, ulitsa Lenina, 74, kv. 62, Chelyabinsk; Zolya Y. Itkis, ulitsa Svobody, 145, kv. 1, Chelyabinsk; Vladimir A. Shirinkin, ulitsa Ternopolskaya, 4, kv. 433, Chelyabinsk; Ida A. Zimina, ulitsa B. Pirogovskaya, 35, kv. 2, Moscow; Vladimir A. Strupinsky, ulitsa Tsiolkovskogo, 11, kv. 26, and Valery V. Koposov, ulitsa Tsiolkovskogo, 11, kv. 51, both of, Nizhny Tagil, all of U.S.S.R.

Filed Jul. 11, 1978, Ser. No. 923,733

Int. Cl.³ C08L 45/00

U.S. Cl. 525—518 6 Claims

1. A method for preparing a carbamide-furan resin suitable for use as a binder in the manufacture of high strength foundry molds and cures by cold curing, said method comprising the steps of:

(a) reacting an unlimitedly water-soluble urea-formaldehyde resin with urea at a temperature from about 50° to 85° C., whereby the free formaldehyde content of the urea-formaldehyde resin is reduced;

(b) modifying the resulting urea-formaldehyde resin by adding furyl alcohol in an amount by weight of from about 0.2 to 2 times the weight of the urea-formaldehyde resin at a temperature of from about 50° to 85° C. and a pH of from about 7.2 to 8.9; and

(c) simultaneously dehydrating the resulting resin under vacuum while conducting the modification step (b), whereby a carbamide-furan resin having an unlimited

miscibility in water and a high cold curing rate is produced.

4,243,781

PROCESS FOR THE PREPARATION OF STYRENE AND ACRYLONITRILE CONTAINING POLYMERS

Raymond W. Kent, Jr, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 25, 1979, Ser. No. 51,940
Int. Cl.[3] C08F 2/00
U.S. Cl. 526—68 8 Claims

1. In a method for the preparation of styrene and acrylonitrile containing polymers wherein sytrene and acrylonitrile are introduced into a recirculating polymerization zone to form a polymerizing mass, the polymerizing mass being of generally constant composition, removing a portion of the polymerizing mass from the polymerization zone, separating volatile components from the mass to thereby recover a styrene and acrylonitrile containing polymer therefrom and returning at least a portion of the volatile components to the polymerization zone, the improvement which comprises maintaining a level of oxygen in feed to the polymerizing zone at a level not greater than 20 parts by weight per million parts by weight of the polymerizing mass wherein the styrene and acrylonitrile prior to entering polymerization zone are sparged with nitrogen and/or are passed through a vacuum chamber to remove oxygen.

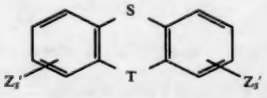
4,243,782

TRANSITION METAL COMPOUND

Ashley D. Bye, and Alan B. Newton, both of Welwyn Garden City, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jun. 16, 1976, Ser. No. 696,822
Claims priority, application United Kingdom, Jun. 16, 1975, 25534/75; Jan. 23, 1976, 2697/76
Int. Cl.[3] C08F 4/66, 10/06
U.S. Cl. 526—140 16 Claims

1. A process for the production of a transition metal composition in which at least one compound of a transition metal of Groups IVA to VIA of the Periodic Table is mixed with at least one organo-compound of aluminium or of a non-transition metal of Groups IA or IIA of the Periodic Table to obtain a solid reaction product, and the solid reaction product is contacted with at least one sulphur-containing organic compound of the formula



in an amount of from 0.01 up to 2.00 moles, of the sulphur-containing organic compound for each gramme atom of the transition metal which is present in the solid reaction product, and at a temperature which is in the range from 60° C. up to 160° C., for at least a part of the period of contacting wherein

Z', or each Z', is, independently, a halogen atom, an alkyl, aryl, alkoxy, aryloxy, alkylthio or arylthio group, or a group $—NR^3R^4$;

R^3 is a hydrogen atom or a hydrocarbyl group;

R^4 is a hydrocarbyl group;

each s is, independently, an integer from 0 up to 5; and

T is an oxygen or a sulphur atom.

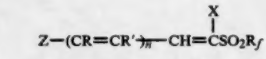
4,243,783

FLUOROALIPHATICSULFONYL SUBSTITUTED ETHYLENES CATALYSTS IN POLYMERIZATION PROCESSES

Robert J. Koshar, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Division of Ser. No. 794,745, May 9, 1977, Pat. No. 4,156,696, which is a division of Ser. No. 684,167, May 7, 1976, Pat. No. 4,069,233, which is a division of Ser. No. 455,141, Mar. 27, 1974, Pat. No. 3,984,357, which is a division of Ser. No. 300,754, Oct. 25, 1972, Pat. No. 3,932,526. This application Sep. 8, 1978, Ser. No. 940,557
Int. Cl.[3] C08F 4/00, 16/14, 16/18
U.S. Cl. 526—225 7 Claims

1. A process comprising contacting monomer selected from the group consisting of epoxides, vinyl ethers, and N-vinyl compounds with a catalytic amount to effect polymerization of said monomer of a fluoroaliphaticsulfonyl ethylene compound having the formula



wherein R_f is a monovalent, saturated perfluoroalkyl radical having 1–18 carbon atoms; X is a monovalent, nonionic, electron withdrawing radical at least as electron withdrawing as a benzoyl radical; R is hydrogen, an alkyl group, or a phenyl group; R' is the same as R with at least one being hydrogen; n is an integer from 0 to 7 depending on Z; n is 1 to 7 when Z is hydrogen, alkyl, alkenyl, aryl, arylalkyl, or alkylaryl; n is zero when Z is aryl, arylmethyl, furyl, thenyl or 1H-pyrrolyl.

4,243,784

PROCESS FOR PRODUCING POWDERED COPOLYMERS OF ETHYLENICALLY UNSATURATED COMPOUND AND MALEIC ANHYDRIDE OR AN ESTER THEREOF

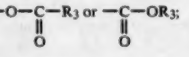
Tosio Akima; Etsuzaburo Kudou, both of Ichihara; Tetsuo Kaneyasu, Hitachi, and Hiromi Kochi, Fukuyama, all of Japan, assignors to Hitachi Chemical Company, Ltd., Japan

Filed Jun. 27, 1978, Ser. No. 919,609
Claims priority, application Japan, Jun. 30, 1977, 52-78667
Int. Cl.[3] C08F 2/00, 222/06, 222/08; B01F 7/00
U.S. Cl. 526—88 14 Claims

1. A process for producing a powdered copolymer of an ethylenically unsaturated compound having a terminal double bond and maleic anhydride or an ester derivative thereof, which comprises

polymerizing a polymerizable reactant mixture comprising an ethylenically unsaturated compound having a terminal double bond and being represented by the general formula:

wherein R_1 is hydrogen, an alkyl group having 1 to 15 carbon atoms, an aryl group, $—OR_3$,

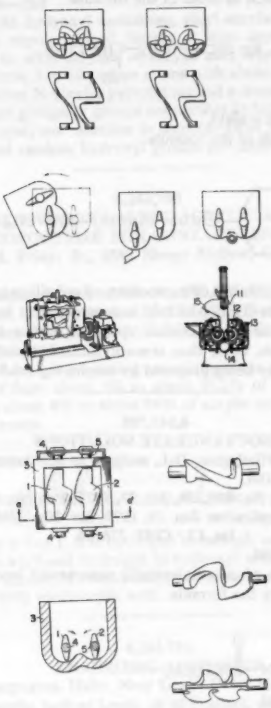


and R_2 and R_3 are independently hydrogen or an alkyl group having 1 to 10 carbon atoms, and maleic anhydride or an ester derivative thereof in a kneading machine with continuous kneading of the reactant mixture in the presence or absence of a poor solvent for the copolymer to form a highly viscous resin phase containing the copoly-

mer produced and remaining polymerizable reactant mixture at least one reactant of which is capable of dissolving the copolymer,

further kneading the highly viscous resin phase,

effecting further polymerization of the resin phase while kneading is continued with tearing of the resin phase to produce solid resin aggregates containing said copolymer, and



continuing the kneading to effect powdering of the solid resin aggregates to produce a powdered copolymer; the internal free volume of the kneading machine being about twice or more of the volume of the reactant mixture or the total volume of the reactant mixture and the poor solvent for the copolymer.

4,243,785

HIGH EFFICIENCY CATALYST FOR POLYMERIZING OLEFINS

Donald F. Birkelbach, Angleton, and George W. Knight, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 5, 1978, Ser. No. 939,638

Int. Cl.³ C08F *4/02, 10/02*

U.S. Cl. 526—115 **19 Claims**

1. In a process for the polymerization of an α-olefin under the conditions characteristic of Ziegler polymerization wherein the polymerization is conducted in the presence of, as a catalyst for said polymerization, a catalytic reaction product of (A) a tetravalent titanium compound or a complex of a trivalent titanium compound with an electron donor, (B) an organomagnesium component selected from (1) an organomagnesium compound or (2) a complex of an organomagnesium compound and an organometallic compound in an amount sufficient to solubilize the organomagnesium compound in a hydrocarbon solvent and (C) a halide source selected from (1) an active non-metallic halide, said non-metallic halide corresponding to the formula R'X wherein R' is hydrogen or an organic group at least as active as sec-butyl and X is halogen or (2) a metallic halide corresponding to the formula $MR_{y-a}X_a$ wherein M is a metal of Group 2B, 3A or 4A of Mendeleeve's Periodic Table of Elements, R is a hydrocarbyl or hydrocarbyloxy radical having from 1 to 20 carbon atoms, X is halogen, y is a number corresponding to the valence of M and a is a number having a value of from 1 to y; provided that the proportions of the foregoing components of said catalytic reaction product being such that the atomic ratio of Mg:Ti is from about 1:1 to about 2000:1, the atomic ratio of Al:Ti is from about 0.1:1 to about 2000:1, the atomic ratio of excess X:Al is from about 0.0005:1 to about 10:1; and further provided that when the organomagnesium compound and/or the halide source provides insufficient quantities of aluminum, there is also present an aluminum compound represented by the formula $AlRy'Xy''$ wherein R and X are as defined above and y' and y'' each have a value of from zero to three with the sum of y' and y'' being three; the improvement which comprises employing as an additional component in the catalyst composition so as to broaden the molecular weight distribution, (D) an anhydrous divalent nickel compound such that the atomic ratio of Ni:Ti is from about 0.01:1 to about 500:1.

4,243,786

CATALYSTS FOR THE POLYMERIZATION OF OLEFINS

Akinobu Shiga; Yoshiharu Fukui; Kazuhiro Matsumura; Toshio Sasaki, and Masahisa Okawa, all of Niihama, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Division of Ser. No. 831,630, Sep. 8, 1977, Pat. No. 4,165,298. This application Apr. 13, 1979, Ser. No. 30,046

Claims priority, application Japan, Sep. 8, 1976, 51-108276; Oct. 22, 1976, 51-127705

Int. Cl.³ C08F *4/64*

U.S. Cl. 526—137 **2 Claims**

1. A method for preparing a highly crystalline olefin polymer, which comprises polymerizing at least one olefin in the presence of a catalyst system consisting essentially of:

(A) the solid titanium trichloride catalyst obtained by treating at about −30° to about 200° C. for about 5 minutes to about 5 hours a titanium trichloride composition or a pulverized product thereof with a mixture of

(1) about 0.001 to about 2.0 moles per mole of titanium chloride in the titanium trichloride composition of at least one halogen or halogen compound selected from the group consisting of (a) a halogen expressed by the general formula

X_2

wherein X represents Cl, Br or I, (b) an interhalogen compound expressed by the general formula

XX'_a

wherein X and X', which are different, each represents Cl, Br or I, and a is 1 or 3, and (c) an iodinated hydrocarbon compound expressed by the general formula

$R_3—I$

wherein R_3 represents a straight-chain or branched-chain alkyl group containing 2 to 18 carbon atoms, and

(2) about 0.001 to about 5.0 moles per mole of titanium trichloride in the titanium trichloride composition of an ether compound expressed by the general formula

$R_1—O—R_2$

wherein R_1 and R_2, which may be the same or different,

each represents a straight-chain or branched-chain alkyl group containing 1 to 8 carbon atoms; and

(B) an activator expressed by the general formula R'_eAlY_{3-e}

wherein R′ represents a straight-chain or branched-chain alkyl group containing 1 to 8 carbon atoms, Y represents a halogen atom, a hydrogen atom or an alkoxy group, and e is a number of from 2 to 3.

4,243,787

BULK ANIONIC POLYMERIZATION PROCESS USING AN ALKALI METAL AMIDE AND THE SALT OF THE SAME ALKALI METAL WITH A HYDROXYLIC COMPOUND

Sylvie L. Boileau, Paris; Paul J. Caubere, Nancy; Gilberte Ndebeka, Vandoeuvre; Serge L. Lecolier, Janville sur Juine, and Serge F. Raynal, Draveil, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Filed Nov. 6, 1978, Ser. No. 957,889

Claims priority, application France, Nov. 23, 1977, 77 35221

Int. Cl.³ C08F *4/48*

U.S. Cl. 526—180 **6 Claims**

1. Process for the polymerisation or copolymerisation of vinyl and dienic monomers, which consists of carrying out the reaction in the absence of solvent and in the presence of an initiator consisting of a molecular combination of an alkali metal amide which is sodium amide, potassium amide or lithium amide with at least one hydroxylic compound which is a member selected from the group consisting of primary alcohols of the formula R—OH in which R is a linear alkyl group, preferably containing more than 2 carbon atoms, or a branched alkyl group or an alkyl group containing a cycloalkyl group or a cyclic ether group, or a linear alkyl group containing at least one ethylenic unsaturation and at least 2 carbon atoms or containing at least one aromatic group,

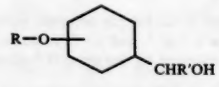
secondary or tertiary alcohols of the formula R′—OH in which R′ is a linear or branched alkyl group or a cycloalkyl group or a polycycloalkyl group,

aromatic alcohols of the formula R″—OH in which R″ is an aryl or polyaryl group which is optionally substituted by alkyl, alkoxy or aminoalkyl groups,

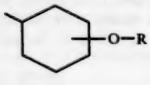
bis-tertiary glycols having an alkyl chain, in which the hydroxyl groups are in the 1,2-,1,3- or 1,4-positions,

ether-alcohols, aminoalcohols, polyether-alcohols, polyaminoalcohols and polyaminoether-alcohols of the formula $R—Y\text{-}CHR_1—CHR_2{}_nOH$ (I) in which R is an alkyl, cycloalkyl, arylalkyl, alkylaryl or aryl group, Y is an oxygen atom or a nitrogen atom substituted by an alkyl group, the symbol Y being all oxygen or all substituted nitrogen atoms or, being both oxygen atoms and substituted nitrogen atoms, R_1 and R_2 are identical or different and are a hydrogen atoms, a methyl group or an ethyl group, Y being oxygen when at least one of R_1 and R_2 is a methyl or ethyl group, and n is an integer from 1 to 10,

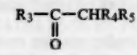
the ether-alcohols of the formula:



in which R has the above meaning and R′ is a hydrogen atom or a group

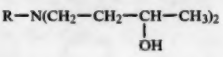


enols of the ketones of the formula



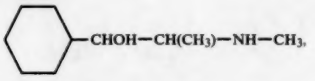
in which R_3 is a hydrocarbon group and R_4 and R_5 are identical or different and are a hydrogen atom or a hydrocarbon group,

diolamines such as those of the formula



in which R=alkyl,

aminoalcohols of the formula



industrial mixtures of monoethers of polyalkoxyglycols of the formula (I) in which Y is oxygen and n has a value such that the chains contain up to 100 carbon atoms,

trialkylsilanols, other than trimethylsilanol, and thiols and,

said initiator being prepared by employing 2-3.5 moles of.

4,243,788

ISOCYANURATE SOLUTIONS

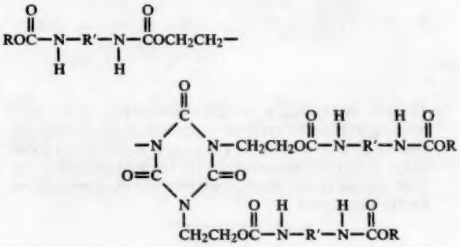
Erich Kuehn, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Division of Ser. No. 819,239, Jul. 27, 1977, Pat. No. 4,159,376. This application Jan. 29, 1979, Ser. No. 7,065

Int. Cl.³ C08F *226/06*

U.S. Cl. 526—261 **4 Claims**

1. A solution of an ethylenically unsaturated isocyanurate characterized by the formula:



wherein R is a monovalent radical obtained by removing the hydroxyl group from hydroxylpropyl methacrylate, hydroxylethyl methacrylate, hydroxylethyl acrylate, or hydroxypropyl acrylate and R′ is a divalent organic radical free of a group which is reactive with an isocyanate group and is obtained by removing two isocyanate groups from an aromatic diisocyanate, dissolved in a solvent selected from the group consisting of styrene, methylmethacrylate, divinylbenzene, ethylmethacrylate, ethylacrylate, methylacrylate, 2-ethylhexylacrylate, 2-ethylhexyl-methacrylate, butylacrylate, butylmethacrylate, cyclohexylmethacrylate, cyclohexylacrylate, t-butyl styrene, chlorostyrene, acrylonitrile, vinylidene chloride, vinyl acetate, vinyl toluene, tetrahydrofurfuryl methacrylate, vinyl pyrrolidone, diethylene-glycoldiacrylate, triethylene-glycoldiacrylate, allylmethacrylate, diallylfurmate, 1,3-butyleneglycoldimethacrylate, polyethylene glycol diacrylate, and mixtures thereof.

4,243,789
HYDROXYL-CONTAINING LIQUID POLYMERS AND PRESSURE-SENSITIVE ADHESIVES PREPARED THEREFROM

Jack C. Gilles, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 829,699, Sep. 1, 1977, Pat. No. 4,145,511. This application Jan. 22, 1979, Ser. No. 5,549

Int. Cl.[3] **C08G** *18/62;* **C07D** *207/06;* **C08G** *18/69;* **B32B** *27/40*

U.S. Cl. 526—263 **15 Claims**

1. A liquid hydroxyl containing alkyl acrylate copolymer comprising copolymerized therein at least about 85 weight percent of an alkyl acrylate of acrylic acid wherein the alkyl group contains 3 to 10 carbon atoms with about 2 to about 10 weight percent N-vinyl-2-pyrrolidone and a monomer containing hydroxyl groups or groups convertible to hydroxyl groups and said copolymer contains an average from about 1.4 to 6 terminal and random hydroxyl groups per molecule.

4,243,790
STYRENE/HYDROXY ALKYL ACRYLIC ACID ESTER COPOLYMER FOR CONTACT LENSES

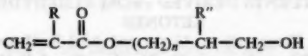
William M. Foley, Jr., 2551 Sleepy Hollow, Glendale, Calif. 91206

Continuation-in-part of Ser. No. 797,005, May 16, 1977, abandoned. This application Jun. 30, 1978, Ser. No. 920,670

Int. Cl.[3] **C08F** *212/08, 220/20;* **G02C** *7/04*

U.S. Cl. 526—320 **7 Claims**

1. A contact lens consisting essentially of the polymerization product of from about 5% to about 93.5% of styrene monomer, from about 4% to about 94% of acrylic monomers of the general formula



wherein n is 0 or 1, R is hydrogen or methyl, and R″ is hydrogen when n is 0 and hydrogen or hydroxyl when n is 1, and an effective amount of cross-linking monomer and optionally up to about 10% methacrylic acid.

4,243,791
ANAEROBIC ADHESIVES

Keith Hargreaves, Huby, Near Leeds; David Hartley, and Paul Wainwright, both of Leeds, all of England, assignors to Rocol Limited, Leeds, England

Filed Jan. 23, 1979, Ser. No. 5,728

Int. Cl.[3] **C08F** *236/06*

U.S. Cl. 526—320 **15 Claims**

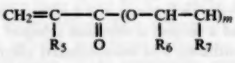
1. An anaerobic adhesive comprising as a bond forming system a polymerizable aromatic-based acrylate monomer and a compatible liquid butadiene acrylonitrile copolymer, together with a latent initiator for the polymerization, said aromatic-based acrylate monomer having the general formula

where:

Ar is a divalent aromatic residue;

R_1 and R_2 represent hydrogen, alkyl, aryl, or hydroxyalkyl groups, or halogen; and

R_3 and R_4 represent



where m is an integer of from 1 to 20 and R_5, R_6, and R_7 represent hydrogen, alkyl, or alkoxy groups, the same or different.

4,243,792
MOISTURE CURING POLYURETHANE TOPCOAT PAINT WITH IMPROVED GLOSS STABILITY

William T. Short, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 11, 1977, Ser. No. 795,798

Int. Cl.[3] **C08G** *18/38*

U.S. Cl. 528—73 **5 Claims**

1. A paint composition characterized by the ability to provide a cured finish over a base material, the finish being gloss stable when exposed to ultraviolet radiation, said paint comprising as a binder resin an aliphatic isocyanate terminated polyurethane prepolymer containing chemically incorporated in the molecular chains thereof a bis-2,2,6,6 tetraalkyl group hindered piperidinyl ester of an aliphatic dicarboxylic acid ultraviolet stabilizer, the stabilizer thus being distributed uniformly throughout said paint composition and prevented from separating from said binder.

4,243,793
PREPOLYMERS FOR PHOTOCURABLE COMPOSITIONS

Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

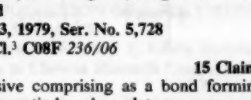
Division of Ser. No. 629,946, Nov. 7, 1975, Pat. No. 4,119,510. This application Jul. 28, 1978, Ser. No. 929,082

Int. Cl.[3] **C08G** *18/67*

U.S. Cl. 528—75 **15 Claims**

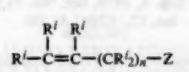
1. A composition formed by the reaction of

(A) an aliphatic diisocyanate having from 9 to 32 carbon atoms per molecule and at least one alkyl side-chain characterized by the formula



where each R is individually selected from the group consisting of hydrogen and alkyl having from 1 to 6 carbon atoms; x and y are, individually, integers having values in the range of 2 to 16; z is an integer having a value in the range of 0 to 5; and the sum of (x+y) is in the range of 5 to 23; and

(B) an unsaturated compound having a maximum of 12 carbon atoms per molecule characterized by the formula



wherein each R^i is individually selected from the group consisting of hydrogen and alkyl having from 1 to 6 carbon atoms, n is an integer having a value in the range of 1 to 6, and Z is selected from the group consisting of —OH, —SH, and —NH-R^{ii} wherein R^{ii} is selected from the group consisting of R^i and alkenyl having from 1 to 6 carbon atoms; wherein the reactant ratio of said diisocyanate (A) to said unsaturated compound (B) is about 1:2.

4,243,794
MIXTURE OF ROUGH AND SPHEROIDIZED RESIN PARTICLES

James L. White, Maplewood, and James G. Berg, North St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 825,925, Aug. 19, 1977, Pat. No. 4,154,871, which is a continuation of Ser. No. 612,639, Sep. 12, 1975, abandoned. This application Oct. 10, 1978, Ser. No. 949,956
Int. Cl.[2] C08J 3/12; C08G 59/00
U.S. Cl. 528—112 6 Claims

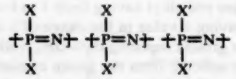
1. Resin powder for applying protective coatings, which powder consists of a mixture of resin particles which as stored are free flowing at ordinary room temperature and would pass through a screen having openings not exceeding 200 micrometers, which particles have a softening point of at least 60° C. but fuse, flow and harden quickly when heated to moderately elevated temperatures, 30–80% of the particles being rounded and at magnifications of 100 to 250X having a glossy appearance comparable to that of polished granite and correspondingly 70–20% being rough and at magnifications of 100 to 250X having a granular appearance comparable to that of rough-hewn granite, which mixture of rough and rounded particles enhances electrostatic coating operations.

4,243,795
POLYPHOSPHAZENE COPOLYMERS CONTAINING N-SUBSTITUTED PYRROLE SUBSTITUENTS

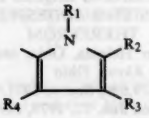
William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 4, 1979, Ser. No. 71,900
Int. Cl.[3] C08G 83/00
U.S. Cl. 528—168 9 Claims

1. A polyphosphazene copolymer containing units represented by the formulas:



wherein X is the same or mixtures of different radicals represented by:



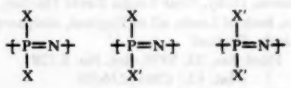
wherein R_1 is selected from the group consisting of substituted and unsubstituted alkyl and aryl radicals and R_2, R_3 and R_4 are selected from the group consisting of hydrogen and substituted and unsubstituted alkyl, alkenyl, aryl, alkoxy, aryloxy, and heterocyclic radicals; and X′ is selected from the group consisting of halogen and substituted alkoxy, aryloxy, amino and mercapto radicals and mixtures thereof.

4,243,796
POLYPHOSPHAZENE POLYMERS CONTAINING SUBSTITUENTS DERIVED FROM ALDEHYDES OR KETONES

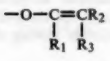
William L. Hergenrother, Akron, and Adel F. Halasa, Bath, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 8, 1978, Ser. No. 941,108
Int. Cl.[3] C08L 83/00
U.S. Cl. 528—224 8 Claims

1. A method of preparing polyphosphazene polyphosphazene polymers comprised of units represented by the formulas:



wherein X is



in which R_1, R_2, and R_3 are independently selected from a group consisting of hydrogen, substituted and unsubstituted alkyl radicals containing from 1 to 15 carbon atoms, and substituted and unsubstituted cycloalkyl, aryl, arylalkyl, and heterocyclic radicals; and wherein X′ is selected from a group consisting of substituted and unsubstituted alkoxy, aryloxy, mercapto and amino radicals, or mixtures thereof; said method comprising reacting a poly(dichlorophosphazene) polymer having a formula $—(NPCl_2)_n—$, where n is from 20 to 50,000 with a first compound selected from the group consisting of an aldehyde containing at least two carbon atoms, a ketone, a mixture of aldehydes or ketones, and a mixture of an aldehyde and a ketone, and a second compound selected from a group consisting of substituted and unsubstituted alkanol, aryl alcohol, amines and mercaptans or mixtures thereof, in the presence of a tertiary amine.

4,243,797

PROCESS FOR THE MANUFACTURE OF SOFT AND HARD RESINS OF UREA, FORMALDEHYDE AND A CH-ACIDIC ALDEHYDE, AND THEIR USE

Harro Petersen, Frankenthal; Kurt Fischer, Ludwigshafen; Hans Klug, Mutterstadt; Werner Trimborn, Limburgerhof, and Horst Schmidt, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

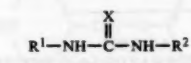
Filed Dec. 20, 1978, Ser. No. 971,187

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1977, 2757220

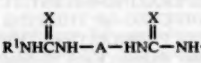
Int. Cl.³ C08G 12/12

U.S. Cl. 528—239 7 Claims

1. A process for the preparation of soft and hard resins from an urea, formaldehyde and a CH-acidic aldehyde, by reacting an urea of formula (I) or (II).



(I)



(II)

where R^1 and R^2 are hydrogen or identical or different alkyl of 1 to 18 carbon atoms, A is alkylene of 1 to 6 carbon atoms and X is oxygen or sulfur, with formaldehyde and a CH-acidic aldehyde of formula (III).

(III)

where R^3 and R^4 are identical or different alkyl, aryl or alkylaryl, the urea, formaldehyde and CH-acidic aldehyde being employed in a molar ratio of from 1:2:2 to 1:4:4, at from 60° to 150° C., in the presence of an acid, wherein the product is then after treated with an alkali metal alcoholate in an anhydrous medium.

4,243,798

PROCESS FOR THE PRODUCTION OF A POLYMERIC CARBAMATE

Frederick C. Franklin, Pinole, and Robert A. Lewis, Berkeley, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Aug. 9, 1979, Ser. No. 65,247

Int. Cl.³ C08G 71/04

U.S. Cl. 528—371 15 Claims

1. A process for the production of a poly(oxyalkylene) carbamate comprising the steps of:

(a) contacting and mixing at a temperature of about 0° C. to about 150° C. reactant streams of poly(oxyalkylene) chloroformate and polyalkylene polyamine, wherein said polyamine contains from 2 to 10 carbon atoms and from 2 to 5 nitrogen atoms, to form a product mixture; wherein said reactant stream of chloroformate contains from 20 to 80 weight percent chloroformate in a hydrocarbon solvent, and said reactant stream of polyamine contains about 6–35 weight percent water, and the mol ratio of polyamine to chloroformate in said streams is from about 5:1 to about 45:1; and, (b) allowing said product mixture to separate at a temperature from about 20° C. to about 120° C. into two phases, a hydrocarbon phase principally comprising hydrocarbon solvent, polymeric carbamate and polyamine, and a polyamine phase principally comprising water, polyamine and polyamine hydrochloride.

4,243,799

POLYMERIZATION OF TETRAHYDROFURAN

Herbert Mueller, Frankenthal; Otto H. Huchler, Limburgerhof, and Herwig Hoffmann, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 974,118, Dec. 29, 1978, Pat. No. 4,189,566. This application May 18, 1979, Ser. No. 40,202

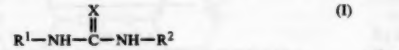
Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 2801578; Jan. 17, 1978, 2801792; European Pat. Off., Jan. 8, 1979, 79100032.6; Japan, Jan. 16, 1979, 54-2312

The portion of the term of this patent subsequent to Feb. 19, 1997, has been disclaimed.

Int. Cl.³ C08G 65/20

U.S. Cl. 528—409 11 Claims

1. In a process for the preparation of polybutylene glycol carboxylic acid diesters of the formula



where R and R^1 are identical or different and each is alkyl, a carboxyl-containing aliphatic radical which may or may not be ethylenically unsaturated, or a carboxyl-containing aromatic radical and n is an integer from 2 to 200, by polymerizing tetrahydrofuran, wherein the tetrahydrofuran, after removal of the catalyst used in the preparation of the tetrahydrofuran, is treated, before polymerization, with a strong mineral acid, an organic sulfonic acid, silica gel and/or a bleaching earth, the treating agent is removed from the tetrahydrofuran, and the tetrahydrofuran is then polymerized in the presence of one or more carboxylic acid anhydrides and a polymerization catalyst, the improvement which comprises: using the polymerization catalyst a bleaching earth containing less than 3% by weight of water, said catalyst being arranged in a fixed bed, and passing a mixture of pretreated tetrahydrofuran and carboxylic anhydride through said fixed bed.

4,243,800

STRIPPABLE COATING RESIN FROM NITROALKANOL AND POLYAMINE

Jerry H. Hunsucker, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Mar. 30, 1979, Ser. No. 25,641

Int. Cl.³ C08G 73/00

U.S. Cl. 528—422 4 Claims

1. A composition comprising (1) 2-amino-2-methyl-1-propanol and (2) the resinous reaction product of (a) tris(hydroxymethyl)nitromethane and (b) an aliphatic polyamine selected from the group consisting of ethylene diamine, propylene diamine, butylene diamine, hexamethylene diamine and tetraethylene pentamine, wherein the reaction is conducted in the presence of the 2-amino-2-methyl-1-propanol in a ratio of up to 1:1 per mole of nitrohydroxy compound.

4,243,801

6''-AMINO DERIVATIVES OF 4-O-AMINOGLYCOSYL-6-O-GAROSAMINYL-1,3-DIAMINOCYCLITOLS

John J. Wright, Cedar Grove, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Filed Jul. 12, 1979, Ser. No. 57,136

Int. Cl.³ A61K 31/71; C07H 15/22

U.S. Cl. 536—17 R 11 Claims

1. The 6''-amino derivative of a 4-O-aminoglycosyl-6-O-garosaminyl-1,3-diaminocyclitol antibacterial agent, and the pharmaceutically acceptable acid addition salts thereof.

4,243,802

SURFACTANT-SOLUBLE CELLULOSE DERIVATIVES

Leo M. Landoll, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jun. 6, 1979, Ser. No. 45,819
Int. Cl.[3] C08B *11/193*
U.S. Cl. 536—91 5 Claims

1. A cellulose ether having a sufficient degree of nonionic substitution selected from the class consisting of methyl, hydroxyethyl, and hydroxypropyl radicals to cause it to be normally soluble in water and which is further substituted with a long chain alkyl radical having 10 to 24 carbon atoms in an amount between that which renders said ether water-insoluble and about 8% by weight based on the total weight of the modified cellulose ether.

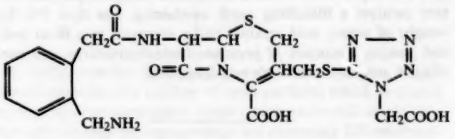
4,243,803

PRODUCTION OF 7-(2-AMINOMETHYLPHENYLACETAMIDO)-3-(1-CARBOXYMETHYLTETRAZOL-5-YLTHIOMETHYL)-3-CEPHEM-4-CARBOXYLIC ACID

Gary M. F. Lim, and Masaki Endo, both of Candiac, Canada, assignors to Bristol-Myers Company, New York, N.Y.

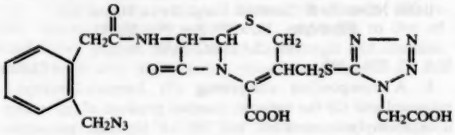
Filed Jul. 5, 1979, Ser. No. 54,733
Int. Cl.[3] C07D *501/04*
U.S. Cl. 544—26 40 Claims

1. The process for the production of the cephalosporin having the formula



which comprises the consecutive steps of

(a) mixing an aqueous solution having a pH of about 7 of the starting compound of the formula



with water-washed, neutral Raney nickel and then

(b) adding to the mixture thus formed a small molar excess compared to said starting material of a borane-amine complex and

(c) stirring the mixture at about room temperature until said starting compound has been substantially completely converted to the desired final product.

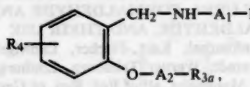
4,243,804

HETEROCYCLIC CONTAINING AMINES

John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 973,197, Dec. 26, 1978, which is a division of Ser. No. 916,979, Jun. 19, 1978, Pat. No. 4,156,079. This application Apr. 30, 1979, Ser. No. 34,515
Int. Cl.[3] C07D *295/12*
U.S. Cl. 544—162 4 Claims

1. A compound having the formula



wherein R_1 is alkyl, cycloalkyl or aryl; R_{3a} is 1-pyrrolidinyl, 1-piperidinyl, 4-morpholinyl, 1-piperazinyl, or 4-alkyl-1-piperazinyl; R_4 is alkoxy; A_1 is a saturated bond or an alkylene group having 1 to 4 carbon atoms; and A_2 is an alkylene group having 2 to 5 carbon atoms; wherein alkyl and alkoxy are groups having 1 to 6 carbon atoms; cycloalkyl is a group having 3 to 7 carbon atoms; and aryl is phenyl or phenyl substituted with a halogen, alkyl, alkoxy, trifluoromethyl, nitro or amino group.

4,243,805

3 FLUORO-10-PIPERAZINO-8-SUBSTITUTED 10,11-DIHYDRODIBENZO-(bf) THIEPINS AND METHOD FOR THE PREPARATION THEREOF

Miroslav Protiva; Miroslav Rajsner; Karel Sindelar; Jiri Jilek; Vaclav Bartl; Jirina Metysova; Antonin Dlabac; Leon Langsadl; Josef Pomykacek, and Frantisek Miksik, all of Prague, Czechoslovakia, assignors to SPOFA, spojene podniky pro zdravotnickou vyrobu, Prague, Czechoslovakia

Filed Dec. 22, 1978, Ser. No. 972,323
Claims priority, application Czechoslovakia, Dec. 22, 1977, 8728/77
Int. Cl.[3] H61K *31/38;* C07D *409/04*
U.S. Cl. 544—375 7 Claims

1. 3-Fluoro-8-isopropyl-10-[4-methylpiperazino]-10,11-dihydrodibenzo(b,f)thiepin.

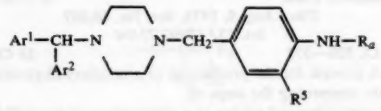
4,243,806

5-[4-(DIARYLMETHYL)-1-PIPERAZINYLALKYL]BENZIMIDAZOLE DERIVATIVES

Alfons H. M. Raeymaekers, Beerse; Josephus L. H. Van Gelder, Tielen; Gustaaf M. Boeckx, Oud-Turnhout, and Lodewijk L. Van Hemeldonck, Rijkevorsel, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 866,882, Jan. 4, 1978, Pat. No. 4,179,505, which is a continuation-in-part of Ser. No. 782,651, Mar. 30, 1977, abandoned. This application Jun. 13, 1979, Ser. No. 48,216
Int. Cl.[3] C07D *295/06, 295/08*
U.S. Cl. 544—396 9 Claims

1. A chemical compound having the formula:



wherein:

Ar^1 and Ar^2 are each independently selected from the group consisting of phenyl, halophenyl, (lower alkyl)phenyl, (lower alkyloxy)phenyl, nitrophenyl, thienyl and pyridinyl;

R_a is a member selected from the group consisting of hydrogen, lower alkyl, aryl(lower alkyl), hydroxy(lower alkyl), cycloalkyl and (lower alkyl)oxy(lower alkyl) wherein said aryl is selected from the group consisting of phenyl, substituted phenyl, thienyl and pyridinyl, said substituted phenyl being phenyl having from 1 to 2 substituents independently selected from the group consisting of halo, lower alkyl and lower alkyloxy; and

R^5 is a member selected from the group consisting of nitro and amino.

4,243,807

4-PHENOXYMETHYL-PIPERIDINES

Walter-Gunar Friebe, Darmstadt; Max Thiel, Mannheim, both of Fed. Rep. of Germany; Kurt Stach, deceased, late of Mannheim-Waldhof, Fed. Rep. of Germany, and by Werner Plattner, administrator, Linz, Austria, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

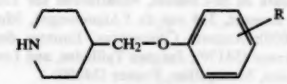
Filed Nov. 1, 1976, Ser. No. 737,518

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1975, 2549999

Int. Cl.[3] C07D *211/22*

U.S. Cl. 546—232 12 Claims

1. A 4-phenoxymethyl-piperidine of the formula



wherein R is hydrogen, halogen, nitro, alkyl of up to 4 carbon atoms or alkoxy of up to 4 carbon atoms.

4,243,808

4-PYRIDINAMINE DERIVATIVES

Edwin T. Edington, Cookham, and Alan C. White, Windsor, both of England, assignors to John Wyeth & Brother Limited, Taplow, England

Continuation-in-part of Ser. No. 873,192, Jan. 30, 1978, Pat. No. 4,180,670. This application Jun. 22, 1979, Ser. No. 51,076

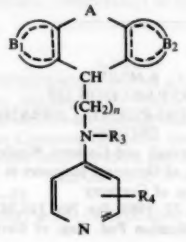
Claims priority, application United Kingdom, Feb. 2, 1977, 4354/77; Jul. 9, 1977, 28879/77

Int. Cl.[3] C07D *213/38*

U.S. Cl. 546—285 3 Claims

1. A compound selected from these having the formula

(I)



and their pharmaceutically acceptable acid addition salts, wherein A is alkylene of 2 to 3 carbon atoms, each of B_1 and B_2 together with the two carbon atoms attached thereto independently represents a member selected from the group consisting of phenylene; phenylene substituted by one or two substituents selected from lower alkyl, lower alkoxy, lower alkylenedioxy, halogen and trifluoromethyl; R_3 and R_4 are independently selected from hydrogen and lower alkyl and n is selected from 0 to 1.

4,243,809

PROCESS FOR THE PRODUCTION OF PYRIDONE COMPOUNDS

Karl Seitz, Oberwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

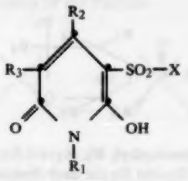
Filed Oct. 26, 1978, Ser. No. 954,820

Claims priority, application Luxembourg, Nov. 4, 1977, 78454

Int. Cl.[3] C07D *213/81, 213/71*

U.S. Cl. 546—291 5 Claims

1. A process for the production of a compound of the formula



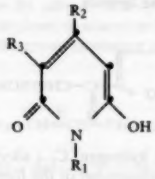
wherein

R_1 is hydrogen, alkyl of 1 to 4 carbon atoms, aminoethyl, hydroxyethyl, isopropyloxypropyl, cyclohexyl or phenyl;

R_2 is hydrogen, alkyl of 1 to 4 carbon atoms, methoxymethyl, sulfomethyl or phenyl unsubstituted or substituted by sulfo and methoxy;

R_3 is hydrogen or carbamoyl; and

X is alkyl of 1 to 6 carbon atoms which is unsubstituted or substituted by fluoro, chloro, bromo, alkoxy of 1 to 12 carbon atoms, phenyl or naphthyl; or is cyclohexyl, vinyl or allyl; which comprises reacting a compound of the formula



in a medium consisting of an aqueous alkaline medium having a pH of 8 to 14, with a compound of the formula

Y-SO_2-X

where Y is fluoro, chloro or bromo.

4,243,810

PYRIDONE-ACETIC ACID DERIVATIVE

Rolf Gericke; Werner Rogalski; Rolf Bergmann, all of Darmstadt; Walter Hameister, Berlin, and Helmut Wahlig, Darmstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 503,705, Sep. 6, 1974, Pat. No. 4,153,693. This application Feb. 1, 1979, Ser. No. 8,893

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1973, 2345402

Int. Cl.[3] C07D *213/78*

U.S. Cl. 546—295 1 Claim

1. 3,5-Dichloro-4-pyridone-1-acetic acid.

4,243,811

2,2,4-TRIMETHYL-4-HYDROXYMETHYL-3-DICHLOROACETYL OXAZOLIDINE

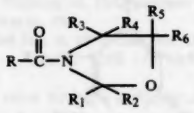
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 655,938, Feb. 6, 1976, Pat. No. 4,186,130, which is a continuation-in-part of Ser. No. 484,514, Jul. 11, 1974, abandoned, which is a continuation of Ser. No. 356,548, May 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 297,582, Oct. 13, 1972, abandoned. This application Jun. 18, 1979, Ser. No. 49,812

Int. Cl.[3] C07D *263/06*

U.S. Cl. 548—215 1 Claim

1. A compound having the formula



in which R is dichloromethyl, R_1, R_2 and R_3 are each methyl, R_4 is methylol and R_5 and R_6 are each hydrogen.

4,243,812

PROCESSES FOR THE PREPARATION OF GLYOXAL-2-OXIMS

Takaji Honna; Motoaki Tanaka; Syozo Yamada, and Hidekazu Miyake, all of Tokushima, Japan, assignors to Taiho Pharmaceutical Company, Tokyo, Japan

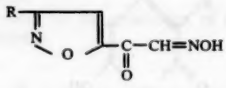
Division of Ser. No. 16,281, Mar. 2, 1979. This application Aug. 20, 1979, Ser. No. 67,889

Claims priority, application Japan, Mar. 9, 1978, 53-27300

Int. Cl.³ C07D *261/12*

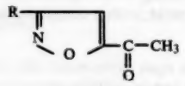
U.S. Cl. 548—248 **3 Claims**

1. A process for the preparation of a glyoxal-2-oxim derivative represented by the formula,



[I]

wherein R represents hydrogen, C_{1-4} alkyl or phenyl, which comprises reacting a compound of the formula,



[III]

wherein R is defined as above, with a compound of the formula, R'ONO [IV] wherein R' represents hydrogen or lower alkyl selected from the group consisting of methyl, ethyl, propyl, butyl and amyl, at a temperature of −10° C. to 50° C.

4,243,813

SUBSTITUTED 1-SULFONYLBENZIMIDAZOLES

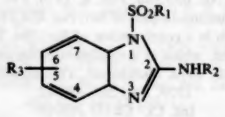
Charles J. Paget, Indianapolis, and James H. Wikel, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 887,391, Mar. 16, 1978, Pat. No. 4,196,125, which is a division of Ser. No. 760,803, Jan. 19, 1977, Pat. No. 4,118,573, which is a division of Ser. No. 634,942, Nov. 24, 1975, Pat. No. 4,018,790, which is a continuation-in-part of Ser. No. 574,202, May 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 484,841, Jul. 1, 1974, abandoned. This application Aug. 13, 1979, Ser. No. 66,353

Int. Cl.³ C07D *235/30, 413/12*

U.S. Cl. 548—306 **3 Claims**

1. A compound of the formula



wherein R_1 is R_4R_5N-, wherein R_4 and R_5 are independently C_1-C_3 alkyl and when taken together with the nitrogen atom to which they are attached, are pyrrolidino, piperidino or morpholino;

R_2 is hydrogen, formyl, acetyl or propionyl;

R_3 is hydroxymethyl, and R_3 is at the 5 or 6 position.

4,243,814

PROCESS FOR THE CHEMICAL CATALYTIC HYDROLYSIS OF AN α-AMINONITRILE OR OF ONE OF THE SALTS THEREOF

Robert Pascal, rue des Bruces Batiment F la Satem, Montpellier, France (34000); Monique Lasperas nee Marnier, Pioch 2 Baillos - Route de St-Clement, Montferrier sur Lez, France (34); Alain Rousset, 314 rue de l'Aiguelongue, Montpellier, France (34000); Auguste Commeyras, Impasse des Ecoles, Clapiers, France (34170); Jacques Taillades, and Louis Mion, 477 rue d'Alco, Montpellier, France (34000)

Filed Dec. 1, 1977, Ser. No. 856,320

Claims priority, application France, Dec. 3, 1976, 76 36520

Int. Cl.³ C07D *233/26, 209/20, 207/09;* C07C *99/10*

U.S. Cl. 548—344 **11 Claims**

1. In a process for the preparation of an α-amino-acid by alkaline hydrolysis of an α-amino-nitrile or one of the salts thereof, the improvement wherein said α-amino-nitrile or salt is submitted to a chemical catalytic hydrolysis by reaction in an aqueous medium of at least one ketone therewith in the presence of hydroxide ions, the ketone being introduced into said aqueous reaction medium in a proportion of from 0.1 mole to 2 moles of ketone per mole of α-amino-nitrile, and the hydroxide ions being introduced into the aqueous reaction medium so as to attain substantially the equimolarity of the hydroxide in proportion to the starting α-amino-nitrile, and wherein, after formation of the salt of α-amino-acid, the free α-amino-acid corresponding to the starting α-amino-nitrile is extracted.

4,243,815

PREPARATION OF METHYLENE-BIS(4-PHENYLCARBAMIC ACID ESTERS)

Franz Merger, Frankenthal, and Gerhard Nestler, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 22, 1980, Ser. No. 114,362

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1979, 2904917

Int. Cl.³ C07C *125/07*

U.S. Cl. 560—25 **6 Claims**

1. A process for the preparation of methylene-bis-(4-phenylcarbamic acid esters), wherein a N-phenylcarbamic acid ester is reacted with a formaldehyde-acetal in the presence of an acid at up to 200° C.

4,243,816

PHENOL-ACETALS

Andreas Schmidt, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

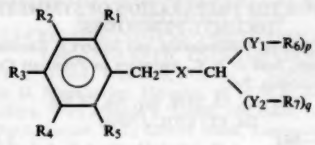
Division of Ser. No. 739,179, Nov. 5, 1976, Pat. No. 4,134,879, which is a continuation of Ser. No. 542,632, Jan. 10, 1975, abandoned. This application Jul. 17, 1978, Ser. No. 925,067

Claims priority, application Switzerland, Jan. 21, 1974, 787/74

Int. Cl.³ C07C *69/76, 65/02*

U.S. Cl. 560—60 **9 Claims**

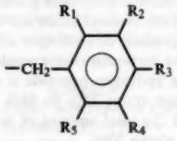
1. A compound of the formula



(I)

in which R_1 and R_5 independently of one another denote hydrogen or lower alkyl, one of R_2 and R_3 denotes hydroxyl and the other denotes alkyl, cycloalkyl or aralkyl, R_4 denotes hydrogen or, if R_3 denotes hydroxyl, additionally also denotes alkyl, cycloalkyl or aralkyl, X denotes a group

wherein R_8 is alkyl, aralkyl or phenyl and R_9 is alkyl, aralkyl, phenyl or the group



or R_9 and R_8 together are alkylene, Y_1 and Y_2 independently of one another denote oxygen or sulphur, p denotes 1 or 2, q denotes 0 or 1, with the proviso that $p+q=2$, and R_6 denotes hydroxycarbonylalkyl, alkoxycarbonylalkyl, cycloalkoxycarbonylalkyl, aralkoxycarbonyalkyl or aryloxycarbonylalkyl.

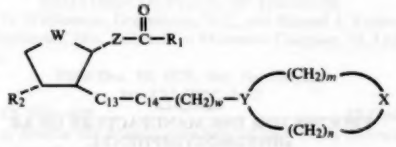
4,243,817

PROSTENOIC ACIDS AND ESTERS

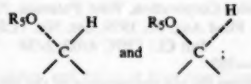
Allan Wissner, Monsey, N.Y.; Martin J. Weiss, Oradell, and Karel F. Bernady, South Sommerville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Mar. 30, 1977, Ser. No. 783,032
Int. Cl.[2] C07C *177/00*
U.S. Cl. 560—62 **54 Claims**

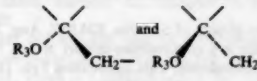
1. An eptically active compound of the formula:



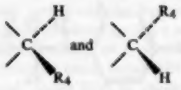
wherein W is a moiety selected from the group consisting of



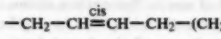
R_5 is selected from the group consisting of hydrogen, tri—(C_1–C_4).alkylsilyloxy and C_2–C_5 alkanoyl; R_1 is selected from the group consisting of hydroxy, tri-(C_1–C_4).alkylsilyloxy and C_1–C_6 alkoxy; R_2 is selected from the group consisting of hydrogen, hydroxy, tri-(C_1–C_4) alkylsilyloxy and C_2–C_5 alkanoyloxy; Y is a trivalent radical selected from the group consisting of a moiety of the formula



wherein R_3 is selected from the group consisting of hydrogen, tri-(C_1–C_4)alkylsilyoxy and C_2–C_5 alkanoyl; X is a divalent radical selected from the group consisting of a moiety of the formula



wherein R_4 is selected from the group consisting of C_1–C_7 alkyl, hydrogen, phenoxy and phenoxy substituted with a compound selected from the group consisting of halogen, trifluoromethyl and methoxy; n is zero or an integer from 1 to 4; m is zero or an integer from 1 to 4, with the proviso that the sum of n and m has the value of 2 to 4; the moiety C_{13}–C_{14} is ethylene or trans-vinylene; w is zero or 1; Z is a divalent radical selected from the group consisting of a moiety of the formulae: —$(CH_2)_p$—,



—$(CH_2)_t$—O—CH_2— and —(CH_2)—S—CH_2; wherein p is an integer from 5 to 7, q is an integer from 1 to 3, and t is an integer from 3 to 5; the racemic mixture thereof; and the pharmacologically acceptable cationic salts thereof when R_1 is hydrogen.

4,243,818

HIGH MOLECULAR WEIGHT PRODUCTS

Edgar R. Rogier, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Oct. 4, 1979, Ser. No. 82,183
Int. Cl.[3] C07C *69/52*; C09F *5/08*
U.S. Cl. 560—224 **9 Claims**

1. The unsaturated esters of a member selected from the group consisting of an alcohol of the formula:

$$CH_3(CH_2)_m[C(CH_2OH)_2]_n(CH_2)_p[C(CH_2OH)_2]_q(-CH_2)_r[C(CH_2OH)_2]_s(CH_2)_tCH_2OH$$

and a diol of the formula:

$$H(CH_2)_kCH(CH_2OH)(CH_2)_hCH_2OH \text{ and mixtures thereof}$$

wherein n plus q plus s are integers the sum of which is from 1 to 3, k and t are 3 or greater and m through t are integers the sum of which is from 12 to 20 and h plus k are non-zero integers the sum of which is from 12 to 20.

4,243,819

SUBSTITUTED AMINO ACIDS

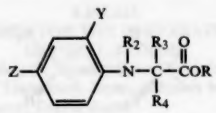
Clive A. Henrick, Palo Alto, and Barbara A. Garcia, Boulder Creek, both of Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 824,947, Aug. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 779,886, Mar. 21, 1977, abandoned. This application Feb. 16, 1978, Ser. No. 878,091

Int. Cl.[3] C07C *101/447*; A61K *31/195*

U.S. Cl. 562—433 29 Claims

1. A compound of the formula:



and the salts thereof of strong organic or inorganic acids, wherein:

R is a metal cation or hydrogen;

R_2 is hydrogen, methyl or ethyl;

R_3 is isopropyl;

R_4 is hydrogen or fluoro;

Y is hydrogen, trifluoromethyl, fluoro, chloro, bromo, lower alkoxy of one to four carbon atoms, lower alkylthio of one to three carbon atoms or lower alkyl of one to four carbon atoms;

Z is lower alkyl of one to four carbon atoms, chloro, fluoro, bromo, trifluoromethyl, alkylthio having from one to four carbon atoms, lower alkylcarbonyl having one to four carbon atoms, lower haloalkylthio having from one to four carbon atoms, or cyclopropyl.

4,243,820

METHOD FOR THE PREPARATION OF CARBOXYMETHYLOXYSUCCINIC ACID

Vincent Lamberti, Upper Saddle River, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed May 15, 1978, Ser. No. 905,628

Int. Cl.[3] C07C *59/235*

U.S. Cl. 562—583 4 Claims

1. A method for the conversion of calcium carboxymethyloxysuccinate to carboxymethyloxysuccinic acid, comprising:

(a) reacting calcium carboxymethyloxysuccinate with sodium carbonate in an aqueous medium;

(b) removing the resulting precipitate of calcium carbonate from the aqueous medium to form a solution of the trisodium salt of carboxymethyloxysuccinic acid;

(c) acidifying the separated solution of the trisodium salt of carboxymethyloxysuccinic acid with sulfuric acid to form a solution of carboxymethyloxysuccinic acid;

(d) extracting the carboxymethyloxysuccinic acid from said aqueous solution with an alcoholic solvent selected from the group consisting of n-butanol, sec-butanol, isobutanol, tertbutanol, pentanol-1, pentanol-2, pentanol-3, 2-methyl-butanol-2, 2-methyl-butanol-3, 2-methyl-butanol-4, 2,2-dimethyl-propanol-1, cyclohexanol and mixtures thereof; and

(e) separating the solvent from the extracted carboxymethyloxysuccinic acid.

4,243,821

PROCESS FOR THE PREPARATION OF SYMMETRICAL DICUMYL PEROXIDES

Ronald E. MacLeay, Williamsville, and Robert T. Kazmierczak, Cheektowaga, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 13, 1979, Ser. No. 75,356

Int. Cl.[3] C07C *179/06*

U.S. Cl. 568—561 5 Claims

1. A process for preparing symmetrical dicumyl peroxides which process consists essentially of:

(a) reacting an olefin, a reactive organic halide and aqueous hydrogen peroxide under relatively non-aqueous conditions in the absence of a free acid and in the presence of a phenol catalyst at a temperature in the range of 10°–50° C. where,

(b) said olefin is α-methylstyrene or a substituted alpha-methylstyrene where the substituents are inert groups substituted on the phenyl ring of the alpha-methylstyrene and is selected from alkyl of 1 to 6 carbons, Cl-, Br-, F-, aryl of 6 to 12 carbons, alkoxy of 1 to 5 carbons or aryloxy of 7 to 10 carbons,

(c) said reactive halide is t-cumyl chloride or t-cumyl bromide or a substituted t-cumyl chloride or t-cumyl bromide where the substituents are inert groups substituted on the phenyl ring of the t-cumyl halide and the reactive halide is the addition product of hydrogen chloride or hydrogen bromide to the particular olefin employed,

(d) said aqueous hydrogen peroxide is an aqueous solution containing from about 25% to 98% hydrogen peroxide and such that the total amount of water in the reaction system is not above 20%,

(e) said phenol catalyst is phenol or naphthol, a mono substituted phenol or naphthol or a di or tri substituted phenol or naphthol where the phenol or naphthol is not substituted simultaneously in the 2 and 6 positions where the substituents are inert groups selected from alkyl of 1 to 6 carbons, alkoxy of 1 to 6 carbons, aryloxy of 6 to 10 carbons, Cl-, Br-, F-, or aryl of 6 to 10 carbons,

(f) the mole ratio of olefin to hydrogen peroxide is in the range 0.5:1 to 5:1 and,

(g) the reactive halide is charged in an amount of about 5–15 mole percent based on the olefin charged.

4,243,822

PROCESS FOR THE MANUFACTURE OF 4,4' DIHYDROXYDIPHENYL

Walter R. Demler, Hamburg; Krishen L. Nagpal, Williamsville; Richard M. Dollard, W. Seneca; Eugene Odin, Williamsville, and Donald T. Donahue, Kenmore, all of N.Y., assignors to Buffalo Color Corporation, West Paterson, N.J.

Filed Aug. 31, 1979, Ser. No. 71,572

Int. Cl.[3] C07C *4/02, 2/58*

U.S. Cl. 568—769 44 Claims

1. In a process for the preparation of the alkali metal salt of 4,4' dihydroxydiphenyl by fusion reaction of an alkali metal hydroxide with an alkali metal diphenyldisulfonate, the improvement which comprises providing a total of from 4 to less than 6 moles of hydroxide to the fusion per mole of alkali metal diphenyldisulfonate provided to the fusion said fusion being free from additivies to enhance fluidity.

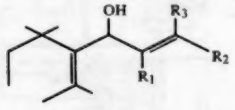
4,243,823

2,6,6-TRIMETHYL-α-(ISO)PROPENYL-1-CYCLOHEXENE-1-METHANOLS AND -1,3-CYCLOHEXADIENE-1-METHANOLS AND ORGANOLEPTIC USES THEREOF

Richard A. Wilson, Westfield; William L. Schreiber, Jackson; Braja D. Mookherjee, Holmdel, all of N.J.; Jacob Kiwala, Brooklyn, N.Y.; Joaquin F. Vinals, Red Bank, N.J.; Manfred H. Vock, Locust, N.J.; Gilbert Stork, Englewood, N.J., and Frederick L. Schmitt, Holmdel, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed May 15, 1979, Ser. No. 39,361
Int. Cl.[3] C07C *33/14*
U.S. Cl. 568—824 1 Claim

1. The compound having the structure:



wherein one of R_1, R_2 or R_3 is methyl and the other two of R_1, R_2 and R_3 represents hydrogen; wherein the dashed line represents a carbon-carbon double bond or a carbon-carbon single bond with the proviso that when R_1 is hydrogen, the dashed line represents a carbon-carbon double bond.

4,243,824

ZERO-VALENT RHODIUM CATALYST HYDROGENATION

Jan G. Noltes, Huis Ter Heide; Gerard van Koten, Bilthoven, both of Netherlands, and Murray S. Cohen, Convent Station, N.J., assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 10,459, Feb. 8, 1979, which is a continuation-in-part of Ser. No. 827,278, Aug. 24, 1977, Pat. No. 4,152,303. This application Oct. 25, 1979, Ser. No. 88,242
Int. Cl.[3] C07C *5/08;* C07N *5/03*
U.S. Cl. 585—259 2 Claims

1. A process for the hydrogenation of aromatic, olefinic and acetylenic compounds comprising treating such compounds with hydrogen in the presence of a zero-valent rhodium catalyst prepared by a process comprising reacting a hydrocarbyllithium compound with a rhodium halide complex of the formula $Rh\ X_aL_b$ where X is a chlorine or bromine, L is an olefinic hydrocarbon ligand, a is 1–3 and b is 1–4 in a hydrobcarbon solvent.

4,243,825

DEHYDROCOUPLING OF TOLUENE

Alex N. Williamson, Greensboro, N.C., and Samuel J. Tremont, Manchester, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 10, 1979, Ser. No. 101,930
Int. Cl.[3] C07C *2/72*
U.S. Cl. 585—428 17 Claims

1. A process for dehydrocoupling toluene which comprises contacting the toluene in the vapor phase at a temperature between about 450° C. and about 650° C. with an inorganic metal/oxygen composition represented by the empirical formula:

$$M_a{}^1M_b{}^2O_x$$

where M^1 is thallium and M^2 is at least one element selected from arsenic, antimony, thorium, uranium, the lanthanides, Groups 3b, 4b, 5b, and 7b of the Periodic Table of the Elements, and mixtures thereof, and wherein a is 1, b is 0.01 to 10, and x is a number taken to satisfy the average valences of M^1 and M^2 in the oxidation states in which they exist in the composition to yield the dehydrocoupled toluene product.

4,243,826

HYDROCARBON DEHYDROGENATION WITH A NONACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 936,428, Aug. 24, 1978, abandoned, which is a continuation-in-part of Ser. No. 786,744, Apr. 11, 1977, Pat. No. 4,110,201, which is a division of Ser. No. 621,718, Oct. 14, 1975, abandoned. This application Aug. 16, 1979, Ser. No. 67,084 The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.
Int. Cl.[3] C07C *5/41*
U.S. Cl. 585—434 21 Claims

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, at hydrocarbon dehydrogenation conditions, with a nonacidic catalytic composite consisting essentially of a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, about 0.1 to about 5 wt. % alkali metal or alkaline earth metal and about 0.01 to about 5 wt. % cadmium; wherein the platinum group, catalytically available cobalt, cadmium, and alkali or alkaline earth components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group component is present in the elemental metallic state; wherein substantially all of the cadmium and alkali or alkaline earth components are present in an oxidation state above that of the corresponding elemental metal; and wherein substantially all of the catalytically available cobalt component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under the hydrocarbon dehydrogentaion conditions or in a mixture of these states.

4,243,827

PROCESS FOR THE CONVERSION OF AROMATIC HYDROCARBONS

Ji-Yong Ryu, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Apr. 6, 1979, Ser. No. 28,015
Int. Cl.[3] C07C *2/70*
U.S. Cl. 585—463 16 Claims

1. A process for the catalytic conversion of an aromatic hydrocarbon comprising contacting the aromatic hydrocarbon with a reactant in the presence of a catalyst which contains ESR active Ti^{+3} species and is prepared by subjecting alumina to anhydrous tetravalent titanium fluoride complexes of an organic compound selected from the group of organic compounds containing at least one methoxy group per molecule or organic compounds having at least one electron donor atom and double bond per molecule, and heat treating the resulting impregnated alumina in an inert atmosphere, and recovering a converted aromatic hydrocarbon as a product of the process.

4,243,828

ALKYLATION OF AROMATICS USING A HIGH SILICA ZEOLITE

George T. Kerr, Lawrenceville; Charles J. Plank, Woodbury, and Edward J. Rosinski, Pedericktown, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 752,227, Dec. 20, 1976, abandoned, which is a division of Ser. No. 546,863, Feb. 3, 1975, Pat. No. 4,011,278, which is a continuation of Ser. No. 296,370, Oct. 5, 1972, abandoned, which is a continuation-in-part of Ser. No. 821,980, May 5, 1969, abandoned, which is a continuation-in-part of Ser. No. 494,846, Oct. 11, 1965, Pat. No. 3,442,795, which is a continuation-in-part of Ser. No. 261,494, Feb. 27, 1963, abandoned. This application Jun. 5, 1978, Ser. No. 912,649
Int. Cl.[3] C07C *2/68, 37/12*
U.S. Cl. 585—467 11 Claims

1. In the process of alkylating a ring alkylatable monocyclic aromatic compound with an aliphatic organic compound reac-

tive with said alkylatable aromatic compound through at least one unsaturated carbon atom therein to produce the alkylation reaction product thereof by contacting such at a temperature of about 70° to 1400° F. with a solid crystalline aluminosilicate zeolite acidic catalyst having a pore size sufficient to permit diffusion of said reactant aromatic and aliphatic compounds thereinto; the improvement which comprises utilizing as said catalyst a chelated zeolite Y having a silica to alumina ratio greater than 10 to 1.

4,243,829

PRODUCTION OF 1,7-OCTADIENE FROM BUTADIENE

Charles U. Pittman, Jr., Department of Chemistry, Box H, University of Alabama, University, Ala. 35486, and Ronald Hanes, Athens, Ga., assignors to Charles U. Pittman, Jr., University, Ala.

Filed Oct. 4, 1976, Ser. No. 729,465
Int. Cl.³ C07C *11/12*
U.S. Cl. 585—511 **15 Claims**

1. A process for preparing 1,7-octadiene which comprises dimerizing butadiene in the presence of a catalytic amount of palladium acetate and a tertiary phosphine, a tertiary amine, formic acid and a solent in an amount sufficient to maintain the catalyst, tertiary amine, formic acid and butadiene in solution wherein:

the molar ratio of the tertiary amine to the formic acid is 1:1-2;

the mole ratio of tertiary phosphine to palladium is at least 1;

the amount of tertiary amines present is such that the pH of the reaction medium is from about 7.5 to 10.5; and

the solvent is at least one member selected from the group consisting of aromatic hydrocarbons, lower alkyl substituted aromatic hydrocarbons, halogenated aromatic hydrocarbons, halogenated lower aliphatic hydrocarbons, nitriles, amides, dilower alkyl ethers, lower alkyl phenyl ethers, cyclic ethers, diethers, lower alkyl esters or lower alkanoic acids, ketones, and lower alkanols.

4,243,830

ALKYLATION PROCESS

Don B. Carson, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

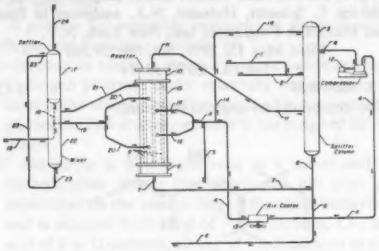
Continuation-in-part of Ser. No. 899,601, Apr. 24, 1978, Pat. No. 4,167,535. This application Aug. 27, 1979, Ser. No. 69,682
Int. Cl.³ C07C *2/56, 2/58*
U.S. Cl. 585—717 **11 Claims**

1. A process for the acid catalyzed alkylation of an isoparaffin with an olefinic feedstock which comprises the steps of:

(a) admixing an olefinic feedstock with an isoparaffin-containing paraffinic feedstock;

(b) separating said mixture in a fractionation means at conditions of temperature and pressure to provide (i) an isoparaffin-olefin fraction having an isoparaffin/olefin mole ratio of from about 1:1 to about 10:1, and (ii) a higher boiling, substantially liquid, olefin-containing normal paraffin fraction which is vaporous at about 60° F. under atmospheric pressure conditions;

(c) increasing the pressure and reducing the temperature of said isoparaffin-olefin fraction, and reacting said fraction in admixture with a hydrofluoric acid catalyst in a reaction vessel at alkylation reaction conditions selected to produce a normally liquid alkylate product;



(d) introducing at least a portion of said olefin-containing normal paraffin fraction into indirect heat exchange means within said reaction vessel, and vaporizing said fraction in said heat exchange means via indirect heat exchange with the warm reaction mixture of step (c); and,

(e) recovering the normally liquid alkylate product of step (c).

4,243,831

REMOVAL OF PEROXIDES AND COLOR BODIES FROM INTERNAL OLEFINS BY SOLID ADSORBENTS

Thomas P. Malloy, Lake Zurich, and George W. Lester, Hoffman Estates, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 30, 1979, Ser. No. 62,097
Int. Cl.³ C07C *7/12*
U.S. Cl. 585—824 **2 Claims**

1. A process for reducing the peroxide number and color of internal aliphatic olefins possessing a carbon content of from about 8 carbon atoms to about 20 carbon atoms which process comprises contacting said internal aliphatic olefins with an adsorbent selected from the group consisting of charcoal, alumina, silica, diatomaceous earth, montmorillonite clays and kaolin minerals at a temperature of from about 10° C. up to about 80° C., wherein said adsorbent is present in a quantity by weight of from about 0.5% to about 10% per unit weight of said internal aliphatic olefins and separating said internal aliphatic olefins of reduced peroxide number and improved color from said adsorbent.

4,243,832

ELECTRIC ARC FURNACES

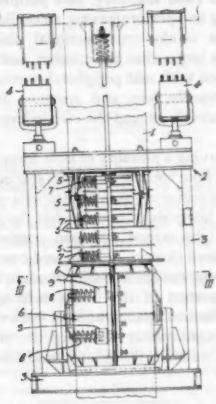
Charles H. Parsons, Benoni, and Badenhorst H. Casper, Verwoerd Park Extension 3, both of South Africa, assignors to Infurnco (Proprietary) Limited, Transvaal, South Africa

Filed Mar. 8, 1979, Ser. No. 18,799

Claims priority, application South Africa, Mar. 9, 1978, 78/1382

Int. Cl.³ H05B 7/1 01

U.S. Cl. 13—16 5 Claims



1. Electrode support gear for an electric arc furnace incorporating a consumable electrode including frame support means, first clamping means mounted on the frame support and incorporating springs biasing the clamping means into clamping association with the electrode whereby the electrode is supported against movement under gravity, power operated second clamping means movable into or out of clamping association with the electrode, and a power operated lever arm also mounted on the frame support and adapted for raising and lowering the said second clamping means, the power operated lever and second clamping means being operable in a first sequence to effect electrode advance and in a second sequence to effect electrode retraction by slipping the electrode in relation to the first clamping means.

4,243,833

CARBON ELECTRODE FOR ARC LAMP

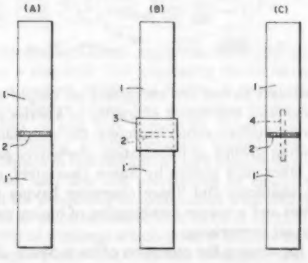
Nagaichi Suga, 2 Toyama-cho, Shinjuku-ku, Tokyo, Japan

Filed Jul. 2, 1979, Ser. No. 55,197

Claims priority, application Japan, Apr. 13, 1979, 54-044187

Int. Cl.³ H05B 31/08, 7/07

U.S. Cl. 13—18 C 8 Claims



1. A carbon electrode for an arc lamp employed in weathering tests which comprises a plurality of carbon rods joined together lengthwise by the use of an adhesive, said adhesive comprising a metal powder, a binder resin bondable to carbon and a solvent for said resin,

said adhesive increasing in resistance with increasing temperature so as to compensate for the decrease in resistance with reduction in length of said electrode as it is consumed, whereby a stable spectral distribution is emitted.

4,243,834

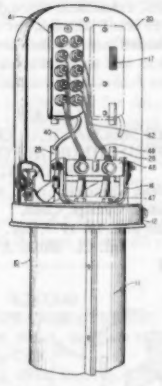
CABLE CLOSURE REHABILITATION APPARATUS

John W. Logioco, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 12, 1979, Ser. No. 2,989

Int. Cl.³ H02G 9/02

U.S. Cl. 174—38 10 Claims



1. In combination:

a pedestal cable closure including

a base member;

first and second preselected numbers of cable conductors supported on said base member;

a cover, affixable to said base member, for enclosing said cable conductors; and

means for converting said pedestal cable closure from a ready access configuration to a limited access configuration, said converting means including

a hoodlike member having

a planar sidewall;

a curved sidewall, vertical edges of which are integrally joined to vertical edges of said planar sidewall;

a truncated semispherical cap, edges of which are integrally joined with top edges of said planar sidewall and said curved sidewall; and

a pair of spaced-apart oppositely directed recesses in

said curved sidewall, said recesses positioned near the points of juncture of said vertical edges of said curved sidewall with said vertical edges of said planar sidewall; and

means, juxtaposed said recesses, for securing said hoodlike member to said base member under said cover such that access to said first preselected number of cable conductors by an unauthorized craftsperson is inhibited, said securing means comprising

a hooklike-shaped mounting bracket having one end thereof adapted for affixation to said base member, said bracket having affixed thereto in a central region a threaded member; and

threaded means, extendable through and secludable in said oppositely directed recesses, for engaging said mounting bracket threaded member such that said hooklike member is securable to said base member.

9. Apparatus for converting a pedestal cable closure from a ready access configuration to a limited access configuration, said apparatus having component parts capable of being assembled in the field to a base of said pedestal cable closure, said apparatus comprising the combination of:

a hoodlike member having a planar sidewall; a curved sidewall, vertical edges of which are integrally joined to vertical edges of said planar sidewall; a truncated semispherical cap, edges of which are integrally joined with top edges of said planar sidewall and said curved sidewall; and a pair of spaced apart oppositely directed recesses in said curved sidewall, said recesses positioned near the points of juncture of said vertical edges of said curved sidewall with said vertical edges of said planar sidewall;

a hooklike-shaped mounting bracket having one end thereof adapted for affixation to said pedestal cable closure base, said bracket having affixed thereto in a central region a threaded member; and

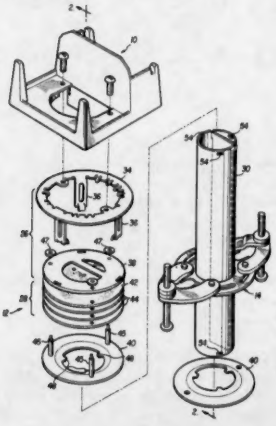
threaded means, extendable through and secludable in said oppositely directed recesses, for engaging said mounting bracket threaded member such that said hoodlike member is securable to said pedestal cable closure base.

4,243,835

NON-RIGID MECHANICAL COUPLING FOR A FIRE-RATED FEED-THROUGH FITTING AND METHOD OF MAKING

Alfred L. Ehrenfels, Cheshire, Conn., assignor to Harvey Hubbell, Incorporated, Orange, Conn.

Filed Jun. 15, 1979, Ser. No. 48,824
Int. Cl.³ H02G 3/22
U.S. Cl. 174—48 **8 Claims**



1. In a fire-rated feed-through fitting for transferring insulated wires through a conduit disposed in a circular opening formed in a floor of a building by which electrical power and other signals are transmitted from a source located at one face of said floor via said wires, through said fitting mounted in said opening to respective circuits connected to said wires and mounted on a head assembly disposed on the opposite face of said floor, an improved non-rigid joint for loosely mechanically coupling said head assembly to said conduit, comprising:

at least one conduit flange having a peripheral portion coupled to said head assembly, said peripheral portion circumscribing an aperture having an outline shaped in correspondence to the cross-sectional dimensions of said conduit, but larger than the conduit, and plural tabs integrally formed with said peripheral portion and extending radially inwardly into said aperture at approximately common intervals around the circumference of said aperture; and

said conduit having a plurality of slots formed in the vicinity of one end of the conduit, said slots spaced substantially in a common transverse plane at intervals corresponding to the spacing intervals of said conduit flange tabs; and

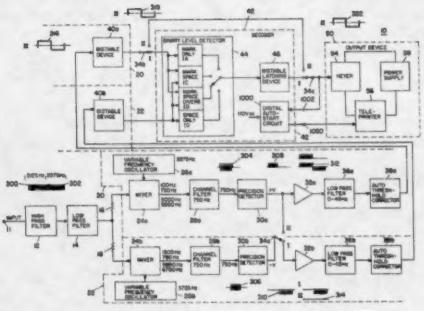
wherein said tabs extend into said conduit slots and are loosely retained therein, holding said conduit and head in assembled relationship via said conduit flange, with the peripheral portion of the flange held spaced from the conduit by limited spaced contact between the tabs and slots, thus significantly reducing thermal conductivity between the conduit, flange and head assembly.

4,243,836

DIGITAL AUTOSTART CIRCUIT

James A. Scharfe, Jr., P.O. Box 338, South Pasadena, Calif. 91030

Continuation of Ser. No. 962,762, Nov. 21, 1978, abandoned.
This application Aug. 16, 1979, Ser. No. 67,169
Int. Cl.³ H04L 7/10; H04M 11/00
U.S. Cl. 178—4.1 R **44 Claims**



1. An autostart circuit for energizing an output device in response to at least one Space character in a series of signals representative of information characters, the information characters including groups of information characters each separated from other such groups by Space characters, each said information character and Space character having the same number of bits and a unique combination of binary states, said autostart circuit comprising:

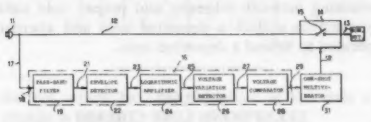
a. means for sensing the reception of each Space character; and

b. means for generating a first output signal in response to at least one sensed Space character for energizing the output device.

4,243,837
TELEPHONE TRANSMISSION INSTALLATION BETWEEN INTERLOCUTORS IN A NOISY ENVIRONMENT

Philippe P. Bertholon, Boulogne-Billancourt, France, assignor to Electronique Marcel Dassault, Paris, France

Filed Aug. 15, 1978, Ser. No. 933,917
Claims priority, application France, Aug. 18, 1977, 77 25338
Int. Cl.³ H04M 1/19
U.S. Cl. 179—1 VC 15 Claims

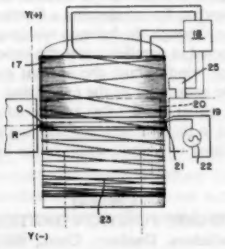


1. A speech detection device having an input receiving an electrical signal comprising noise and/or speech signals and an output assuming a first state when said electrical signal consists of said noise signal and a second state when said electrical signal comprises said speech signal, said device comprising: a first band-pass filter having an input linked to said input of said device and an output, a rectifier means having an input and an output, a logarithmic amplifier with an input and an output, a second band-pass filter with an input and an output, and a voltage comparator with an input and an output, said rectifier means having its input linked to said output of said first band-pass filter and its output linked to said input of said logarithmic amplifier, said second band-pass filter having its input linked to said output of said logarithmic amplifier and its output linked to said input of said voltage comparator, the output of said voltage comparator being linked to said device output.

4,243,838
STIFFNESS VARIATION DEVICE

Dennis K. Coffey, 2220-½ Elba St., Durham, N.C. 27705

Continuation of Ser. No. 818,094, Jul. 22, 1977, abandoned. This application Aug. 23, 1978, Ser. No. 936,282
Int. Cl.³ H04M 1/00; H04R 9/00
U.S. Cl. 179—1 F 17 Claims

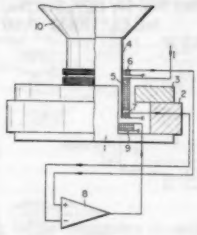


1. An electromechanical apparatus for reducing stiffness comprising: a magnetic flux generating means having a magnetic gap, a current producing means, a group of windings displaceable relative to said flux generating means and cut by magnetic flux of said flux generating means, said group of windings including a first helically wound coil which is densely wrapped at one end and is more loosely wrapped at the opposite end, said first coil conducting an electrical current component for producing in conjunction with said flux generating means an electrodynamic first force in an axial direction on said group of windings which tends to pull the more densely wrapped end of said first coil into said gap, said group of windings including a second coil, said second coil producing a second force acting on said group of windings and directed opposite said first force, said first force increasing with displacement of said group of windings relative to said flux generating means in the direction of said first force, said first force and said second force opposing each other, and including at least one member having stiffness acting on said group of windings whereby the stiffness of said stiffness member is reduced.

4,243,839
TRANSDUCER WITH FLUX SENSING COILS

Kenichi Takahashi; Tatsuo Fukuyama, both of Kyoto; Takafumi Ueno, Moriguchi; Yasuomi Shimada, Hirakata, and Shinichiro Ishii, Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 12, 1978, Ser. No. 968,679
Claims priority, application Japan, Dec. 14, 1977, 52-150799; Dec. 14, 1977, 52-150800
Int. Cl.³ H04R 9/06
U.S. Cl. 179—1 F 14 Claims

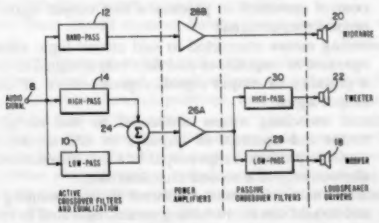


1. In a transducer of the type wherein a bobbin about which a main coil is wound is movably mounted between a pole piece and a plate and the inter-conversion is effected from the current flowing through the main coil to the movement of the bobbin or vice versa, the improvement which comprises upper and lower magnetic flux sensing coils for detecting magnetic flux across the upper and lower end surfaces of said main coil, respectively, a feedback coil, said sensing coils and feedback coil being disposed in a magnetic circuit comprises of said pole piece, plate and main coil, and means for applying a difference between induced electromotive forces or output currents induced thereby in said upper and lower magnetic flux sensing coils to said feedback coil through an amplifier.

4,243,840
LOUDSPEAKER SYSTEM

James M. Kates, Andover, Mass., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Dec. 22, 1978, Ser. No. 972,248
Int. Cl.³ H04R 3/14
U.S. Cl. 179—1 D 12 Claims



1. A loudspeaker system comprising:
a first filter network for dividing the signal energy of an input audio signal into at least three frequency ranges, two

of said frequency ranges being separated by at least the third frequency range;

means for summing at least the signal energy in said two frequency ranges so as to produce a first component signal, the signal energy in said third frequency range forming at least a part of a second component signal;

amplification means for independently amplifying said first component signal and said second component signal;

means including a second filter network for dividing the signal energy of the amplified component signals into at least three output signals, respectively including the signal energy in said frequency ranges; and

a plurality of speaker drivers connected respectively to be driven by said output signals.

4,243,841

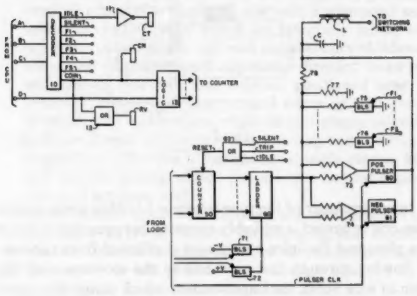
DIGITALLY ACTIVATED COIN CONTROL CIRCUIT

John S. Young, Scottsdale, Ariz., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sep. 24, 1979, Ser. No. 78,414

Int. Cl.³ H04M *17/00*

U.S. Cl. 179—6.3 R **8 Claims**



1. A digitally activated coin control circuit for use in combination with a digitally activated ringing circuit for common manipulation of a prepaid coin station to collect and alternatively to refund deposited coins, said coin control circuit connected between a telephone central processor and a telephone switch network operated in response to binary coded signals from said telephone central processor to produce direct current signals of a first, a second and a third characteristic, said signals of said first and second characteristics for performing said coin collection and alternatively said coin refund operations, said coin control circuit comprising:

decoding means connected to said telephone central processor and operated in response to said binary coded signal to detect whether a coin control operation is required and further operated to detect which of said particular coin control operations is required;

circuit logic means connected to said decoding means and operated in response to said detection of said required coin control operation to produce a first output signal and a second output signal;

counting means connected to said circuit logic means and operated in response to said first output signal to produce a plurality of output signals representative of said first output signal;

circuit switching means connected to said circuit logic means and operated in response to said second output signal to produce a sign output of a first characteristic and alternatively of a second characteristic;

resistive network means connected to said counting means and to said circuit switching means, operated in response to said sign output signal of a first characteristic and alternatively operated in response to said sign output signal of a second characteristic to transmit said sign output signal;

said resistive network means further operated in response to said plurality of output signals to sum said plurality of signals to produce a single signal representative of said direct current signal of a first characteristic and alternatively to produce a single signal representative of said direct current signal of a second characteristic; and

circuit coupling means connected between said resistive network means and said telephone switching network, and operated in response to said single signal representative of said direct current signals of said first and alternatively of said second characteristic and said sign output signal to transmit a final output signal to said telephone switching network whereby said prepay coin station is operated to collect a deposited coin and alternatively operated to refund a deposited coin.

4,243,842

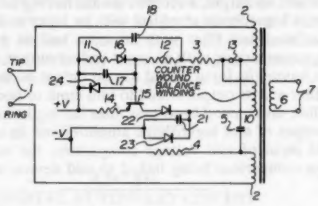
TELEPHONE LINE CIRCUIT

William D. Gibb, Belleville, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 24, 1979, Ser. No. 32,866

Int. Cl.³ H04Q *1/28*

U.S. Cl. 179—18 FA **10 Claims**



1. A line circuit for supplying an energizing current to a communication line, comprising:

a transformer having a split primary winding for conducting the energizing current and a balance winding connected in series with and poled opposite to the split primary winding;

a current regulator connected in series combination with the balance winding for conducting a fraction of the energizing current through the balance winding;

means connected in parallel across the series combination of the balance winding and the current regulator for conducting the remainder of the energizing current;

whereby the direct current flux associated with the energizing current in the split primary winding is reduced by the flux associated with the current in the balance winding.

4,243,843

COARSE POSITION DIGITIZER

Richard T. Rocheleau, Danbury, Conn., assignor to Summagraphics Corporation, Fairfield, Conn.

Filed Feb. 22, 1979, Ser. No. 14,137

Int. Cl.² G08C *21/00*

U.S. Cl. 178—19 **11 Claims**

1. Apparatus for determining the distance of a point on a surface from an axis on said surface comprising a cursor having a magnetisable element adapted to be energized by an alternating voltage,

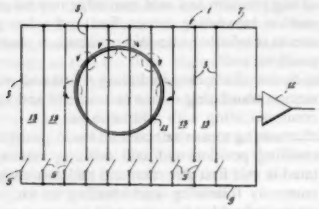
a grid of substantially parallel spaced conductors, said cursor being movable thereover and inductively coupled thereto,

means for sequentially enabling only one of said conductors to conduct a current induced by said alternating voltage at any one time,

means for comparing percentages of the amplitudes of currents induced in successively enabled conductors,

means for sensing a change in the phase of said induced

current, and means responsive to said comparing means and said sensing means for counting the number of conductors which have been enabled at the time a phase change is sensed.

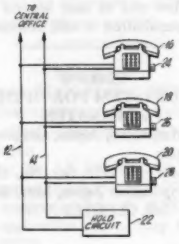


4,243,844

HOLD CIRCUIT FOR TELEPHONE SYSTEM

Herbert H. Waldman, 1739 52nd St., Brooklyn, N.Y. 11204

Filed Sep. 19, 1978, Ser. No. 943,679
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—81 R **51 Claims**



1. A telephone line hold circuit connected with a telephone line and at least one telephone instrument connected to said telephone line for establishing a hold condition on the telephone line, said telephone instrument having an on-hook state and an off-hook state, said telephone instrument including switch means for imposing an electronic actuating signal onto said telephone line independent of said hold circuit upon manual actuation of said switch means, said hold circuit comprising, in combination, responsive means and line-seizure means, said actuating signal causing said responsive means to produce an output voltage, said output voltage affecting activation of said line-seizure means to seize said telephone line for establishing said hold condition, and said manual actuation of said switch means being operative to affect said hold condition only in said off-hook state.

4,243,845

REPERTORY TELEPHONE DIALING APPARATUS

Martin H. Feinberg, Montvale; John DeFilippis, South Amboy, and Ting W. Wong, Ocean Port, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 22, 1979, Ser. No. 5,540
Int. Cl.³ H04M *1/274*
U.S. Cl. 179—90 B **9 Claims**

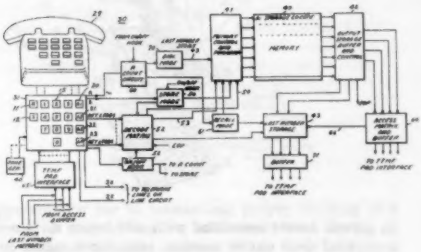
1. A repertory dialing system for a telephone subset comprising:

a keyboard array having a first set of 0 to 9 digit keys, a second set of digit keys, and an R key and an S key,

memory means having a plurality of accessible storage locations, each one capable of having stored therein a plurality of digits indicative of a telephone number,

first control means coupled to said memory means and responsive to the operation of said S key and the selection of either at least one of said first digit keys or one of said second digit keys to cause said memory to store, at a selected location indicative of said selected digit key or keys, a telephone number subsequently dialed by said first digit keys,

second control means coupled to said memory and responsive to a single operation of said R key and the selection of either at least one of said first digit keys or one of said second digit keys to cause said memory to retrieve a stored telephone number from a location indicative of said selected digit key or keys,



signal generating means responsive to said number as retrieved to generate a signal capable of transmission via a telephone line and indicative of said telephone number,

additional memory means operative to store therein a telephone number dialed solely by the operation of said first digit keys,

logic means coupled to said additional memory means and responsive to the multiple operation of said R key to cause said additional memory means to retrieve said telephone number as stored, and

means for coupling said logic means to said signal generating means to generate another signal indicative of said dialed telephone number as stored in said additional memory means whereby the last number dialed by said first digit keys is always stored in said additional memory means.

4,243,846

PUSHBUTTON SWITCH ASSEMBLY FOR TELECOMMUNICATIONS AND OTHER INPUT APPARATUS

George V. Lenaerts, London; Roger Perks, Kanata, and Phillip J. Dudley, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 5, 1979, Ser. No. 9,656
Int. Cl.³ H04M *1/50*; H01H *3/12*
U.S. Cl. 179—90 K **11 Claims**

1. A pushbutton switch assembly comprising:

a steel sheet circuit member having upper and lower surfaces;

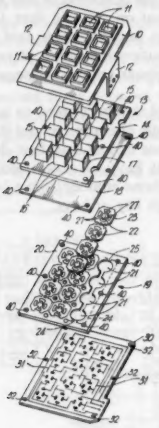
a porcelain layer on at least said upper surface;

a contact circuit on said porcelain layer, said circuit including a plurality of switch positions, each position including a plurality of contact areas;

a spring contact assembly mounted on said upper surface and including a plurality of contact members each contact member aligned with a switch position of said contact circuit and including contact means for electrical contact with the contact areas at the related switch position and having a snap action for rapid making and breaking of contact with said contact areas;

a pushbutton assembly mounted on said spring contact assembly, said pushbutton assembly comprising a flat sheet

member and a plurality of pushbuttons integral with said flat sheet member, a pushbutton for each contact member and related switch position; and



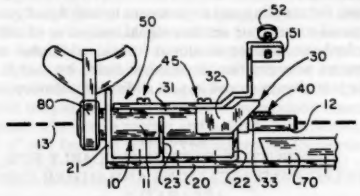
circuit means associated with said lower surface of said steel sheet circuit member, said circuit means comprising an electrical circuit pattern and electrical devices connected to said circuit pattern.

4,243,847

AUTOMATIC RESTORAL MECHANISM FOR A PUSHBUTTON KEY TELEPHONE INSTRUMENT

Babulal V. Gala, Huntsville, Ala., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 30, 1979, Ser. No. 34,522
Int. Cl.³ H04M *1/08*
U.S. Cl. 179—99 R **13 Claims**



1. Pushbutton restoring means for a key telephone instrument, said key telephone instrument including a base and at least one pushbutton mounted on said base, said pushbutton selectively operable between a restored and activated position, said pushbutton manually activated and retained in said activated position by a latch bar engaging said pushbutton, said restoring means comprising:

rotating means including first and second sections said rotating means disposed to be manually rotated in a first directions;

actuating means including a cam edge, selectively mounted on said rotating means first section and disposed to be manually moved into a first position enabling said pushbutton restoring means and alternatively manually moved into a second position disabling said pushbutton restoring means;

motion translating means pivotly mounted and including first and second ends, said first end arranged to be movable between a first and second position, said motion translating means first end resting on said rotating means second section adjacent to and in contact with said actuating means cam edge in said first position when said actuating means is selected into said pushbutton restoring enabling position and said cam edge moved away from said motion translating means first end when said actuating means is selected into said pushbutton restoring disabling position; and

motion transfer means including a first end mounted to said motion translating means second end and an opposite end communicating with said latch bar;

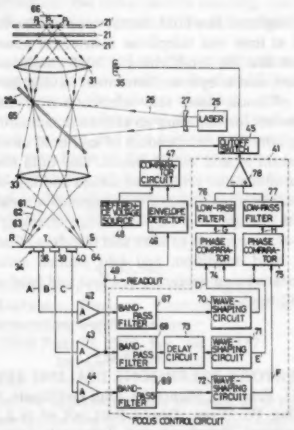
said actuating means selected into said pushbutton restoring enabling position and said rotating means manually rotated in said first direction and said actuating means simultaneously following said rotating means, said actuating means cam edge moving said motion translating means first end to said second position, translating said rotational motion to a horizontal motion, said motion translating means second end simultaneously moved in an opposite direction and said motion transfer means following said opposite motion and applying mechanical force on said latch bar to disengage said latch bar from said pushbutton, thereby releasing said pushbutton to said restored position, and alternatively said actuating means selected into said pushbutton restoring disabling position and said rotating means manually rotated in said first direction, said actuating means simultaneously following said rotating means and said actuating means cam edge falling short of said translating means first edge failing to move said translating means first end to said second position, thereby retaining said pushbutton in said activated position.

4,243,848

FOCUS CONTROL SYSTEM FOR OPTICAL READ-OUT APPARATUS

Yoshihiro Utsumi, Musashino, Japan, assignor to TEAC Corporation, Tokyo, Japan

Filed Mar. 12, 1979, Ser. No. 19,596
Claims priority, application Japan, Mar. 20, 1978, 53/32019
Int. Cl.³ G11B *7/12*
U.S. Cl. 369—45 **5 Claims**



1. In apparatus for reading a record carrier on which information is recorded in the form of a succession of optically readable regions disposed along a predetermined track, in combination:

(a) a light source for emitting a beam of light;

(b) an objective for focusing the light beam on the record carrier;

(c) means for creating a relative scanning motion between the record carrier and the light beam so that the light

beam follows the predetermined track on the record carrier and so is modulated by the information recorded thereon;

(d) first, second, and third photodetector elements arranged to be irradiated by the information-modulated light beam and aligned in such a direction that the successive images of the optically readable regions on the record carrier travel thereover, so that the three photodetector elements produce electrical outputs having a phase relationship varying in accordance with the distance between the record carrier and the objective;

(e) a time-delay circuit, connected to the second photodetector element which is disposed intermediate the first and the third photodetector elements, for delaying the output therefrom for a prescribed length of time;

(f) a first phase comparator, connected to the first photodetector element and to the time-delay circuit, for producing an output representative of the phase difference between the outputs therefrom;

(g) a second phase comparator, connected to the time-delay circuit and to the third photodetector element, for producing an output representative of the phase difference between the outputs therefrom;

(h) a differential amplifier, connected to the first and the second phase comparators, for producing an output representative of the difference in magnitude between the outputs therefrom; and

(i) means responsive to the output from the differential amplifier for controllably varying the distance between the record carrier and the objective in order to hold the light beam focused on the record carrier.

4,243,849

SIGNAL RECORDING DEVICE

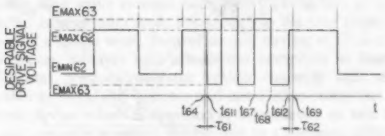
Takeshi Goshima, Tokyo; Hideaki Sato, Yokohama, and Takao Tsuji, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 837,912, Sep. 29, 1977, abandoned, which is a continuation of Ser. No. 576,268, May 12, 1975, abandoned. This application May 7, 1979, Ser. No. 36,512

Claims priority, application Japan, May 15, 1974, 49-54167; Sep. 20, 1974, 49-108576

Int. Cl.³ H04N *5/76*; G11B *11/12*

U.S. Cl. 369—62 **6 Claims**



1. Apparatus for recording information on an information recording medium using a beam, comprising:

beam forming means operative in response to modulating signals applied thereto for forming a corresponding modulated beam having a predetermined cross section and energy profile, said information recording medium being sensitive to the beam impinging thereon from said beam forming means;

information means for introducing an information signal to be recorded on said information recording medium;

pulse width control means, having the information signal coupled thereto as an input, for altering the pulse widths of the information signal, wherein said pulse width control means provides an altered output signal, said control means comprising delay means for altering the time of occurrence of the leading edges of pulses included in the information signal in accordance with the wavelength of the information signal; and

means coupled to said beam forming means and said pulse width control means for applying the altered output signal to said beam forming means as a modulating signal, wherein variations in the exposure of said recording medium which would otherwise occur as a result of said predetermined beam cross section and energy profile are prevented.

4,243,850

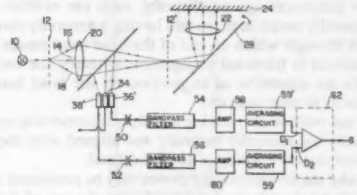
APPARATUS FOR TRACKING A RECORD TRACK ON A VIDEO DISC

Evan A. Edwards, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 7, 1979, Ser. No. 10,104

Int. Cl.³ G11B *21/10*

U.S. Cl. 369—46 **4 Claims**



1. Apparatus for use in maintaining proper tracking of a record track on a record carrier, said record track having an information signal recorded thereon in the form of optical structure, said apparatus comprising:

a source of radiation for producing a pair of tracking spots impinging on said record carrier and nominally disposed toward opposite sides of said record track;

means for detecting each of said tracking spots after they interact with said record carrier, and for producing respective tracking signals indicative of such interaction;

means for isolating respective alternating signal components from each of said tracking signals, said signal components corresponding to the recorded information signal or a portion thereof; and

means for comparing said respective signal components and for producing a tracking error signal based upon such comparison, said signal component comparing means being comprised of means for determining the average amplitudes of said isolated signal components, and means for comparing said average amplitudes and for producing a tracking error signal based upon such comparison.

4,243,851

EAR CUSHIONING DEVICE FOR HEADPHONES

Robert B. Forney, Star Rte. 607, Muir Beach, Calif. 94965

Filed Jul. 16, 1979, Ser. No. 57,742

Int. Cl.³ H04R *1/02*

U.S. Cl. 179—156 R **6 Claims**

1. An ear cushioning device for use with headset-mounted plug type earphones, comprising:

a one-piece integrally formed pad of soft, resilient foam material having two ear cushions, one at each end, for placement against the ears;

each ear cushion having an earphone-receiving opening

located generally centrally, to be positioned over the ear opening of the user; and

said pad including a stretchable band connecting the two ear cushions, for extending over the top of the user's head and for helping support the ear cushions in place against the ears;

whereby the user may position the ear cushioning device over the head, with the two cushions against the ears, with the earphone headset to be received with the plug type earphones springingly engaged within the openings.

5. An ear cushioning device for use with headset-mounted plug type earphones, comprising:

a semi-rigid, springably yieldable generally U-shaped head band, having an elongated slotted opening near each end;

a pair of ear cushions formed of a soft, resilient foam material for placement against the ears, each ear cushion being generally round in shape and having a generally diametral slot through which an end of the head band passes and is received in frictional engagement whereby the ear cushions are adjustable as to position on the head band and thus as to user size; and

each ear cushion also having an earphone-receiving opening positioned generally centrally and aligned with the elongated slotted opening of the head band;

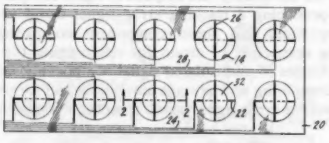
whereby the ear cushioning device may be positioned on the user's head with the head band over the top of the head and the ear cushions adjusted to engage resiliently against the ears, with an earphone headset to be received with its earphone plugs springingly engaged within the earphone-receiving openings.

4,243,852

MEMBRANE SWITCH WITH MEANS FOR IMPEDING SILVER MIGRATION

Willis A. Larson, Crystal Lake, Ill., assignor to Oak Industries Inc., Crystal Lake, Ill.

Filed Apr. 16, 1979, Ser. No. 30,470
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A **11 Claims**



1. In a membrane switch, a substrate, a first silver conductor formed on said substrate, a flexible membrane, a second silver conductor formed on said membrane, a spacer positioned between said substrate and membrane, an opening in said spacer in register with said first and second conductors, said membrane moving toward said substrate through said opening to cause contact between said first and second conductors in response to pressure upon the exterior of said membrane, and means for impeding migration of silver between said first and second conductors by maximizing the silver migration path therebetween.

4,243,853

ROTARY CODED SWITCH

W. Bard Turner, Lexington, Mass., assignor to C & K Components, Inc., Newton, Mass.

Continuation-in-part of Ser. No. 894,599, Apr. 7, 1978, abandoned. This application Mar. 16, 1979, Ser. No. 21,562
Int. Cl.³ H01H *19/56*
U.S. Cl. 200—8 R **49 Claims**

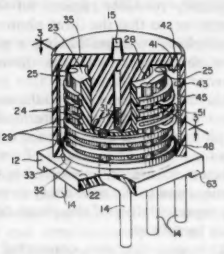
1. A rotary coded switch comprising:

a body member;

a cover rotatably mounted to said body member;

a plurality of terminals within said body member and projecting therefrom;

printed circuit means mounted to said cover and surrounding said body member, said printed circuit means rotating with said cover; and



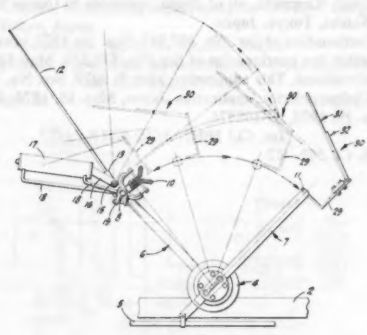
means for making sliding contact between said terminals and said printed circuit means for simultaneous selective coding circumferentially and longitudinally on the surface of said printed circuit means by said contact making means.

4,243,854

QUICK-BREAK ATTACHMENT FOR A POLE-TOP AIR-BREAK SWITCH

Richard B. Pahl, P.O. Box 8485, Stockton, Calif. 95208

Continuation of Ser. No. 2,999, Jan. 12, 1979, abandoned. This application Nov. 5, 1979, Ser. No. 91,104
Int. Cl.³ H01H *31/00*
U.S. Cl. 200—48 R **9 Claims**



1. An improved quick-break attachment for a pole-top air-break switch which includes a fixed switch arm and a movable switch arm in normally adjacent switch-closed relation, the movable switch arm being swingable in a direction away from the fixed switch arm to open the switch; the quick-break attachment comprising a flexible but resilient whip, means mounting the whip at its inner end and in connection with and projecting from the fixed switch arm, a catch including a cradle, and means fixedly mounting the catch in connection with and projecting from the movable arm, the whip being engaged with the catch cradle when the switch is closed, the whip being swung, bowed, and spring-loaded by the catch cradle, progressively sliding towards its tip on the catch cradle, and thence snap-disengaging at the tip from the catch cradle, all upon and in response to the movable switch arm swinging in said direction to open the switch; characterized by the inclusion of an elongated finger which projects from the catch cradle in a position intersecting the path of the whip beyond the point of its snap-disengagement from the catch cradle whereby after said snap-disengagement the whip spring-

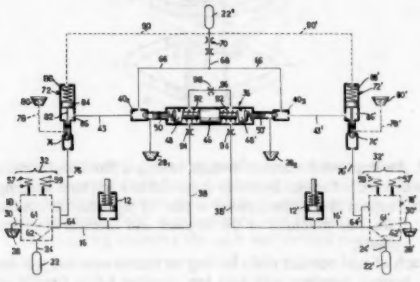
unloads, straightens, and engages and rides said intersecting finger, and hence prolongs electrical contact until the whip escapes said finger.

4,243,855

HYDRAULIC SYSTEM FOR SIMULTANEOUS CONTROL, ESPECIALLY FOR THE CONTROL OF ELECTRIC CIRCUIT BREAKERS

Claude A. Gratzmuller, 97 avenue Victor Hugo, 75016 Paris, France

Filed Nov. 15, 1978, Ser. No. 960,742
Claims priority, application France, Dec. 2, 1977, 77 36277
Int. Cl.³ H01H *35/24*; F15B *11/16*
U.S. Cl. 200—81.4 **13 Claims**



1. A fluid control installation for simultaneously bringing at least two motors driven by fluid under pressure from a rest position to a work position, especially at least two hydraulic jacks so arranged that each jack actuates a circuit breaker module for bringing said modules either to the closed position or to the open position and for preventing any non-simultaneous operation of said motors, said installation being provided in the case of each motor with a system of two-position servo-controlled valves which establish a connection in the first position between an active chamber of the corresponding motor and a source of fluid under pressure in order to bring said motor to the work position and which are intended in the second position to initiate the return of said motor to its rest position, said valve systems being servo-controlled at least in order to change over from the second to the first position by means of a single work control device having at least temporary action, wherein said installation comprises at least one differential pressure detector which connects said motors together in pairs, and wherein said installation comprises a rest control device which is operated in dependence on said detector and comes into action in response to a pressure difference, said rest control device aforesaid being connected to all said valve systems in order to return all the valves to the second position when said at least one detector measures a pressure difference.

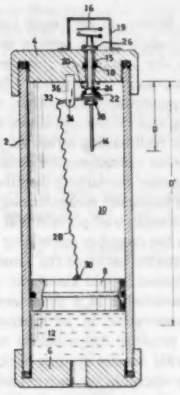
4,243,856

PISTON-TYPE HYDROPNEUMATIC ACCUMULATOR EQUIPPED WITH A GAS SHORTAGE DETECTION DEVICE

Jean L. Gratzmuller, 66 Boulevard Maurice Barrés, 92200 Neuilly sur Seine, France

Filed Feb. 15, 1979, Ser. No. 12,447
Claims priority, application France, Feb. 27, 1978, 78 05511
Int. Cl.³ H01H *35/38*
U.S. Cl. 200—81.5 **7 Claims**

1. A hydropneumatic piston accumulator comprising a cylinder, two cylinder ends and a free piston which divides the cylinder into a liquid compartment and a gas compartment, of the type comprising a gas shortage detection device provided with a movable member which is placed within the gas compartment and on which a thrust is exerted by the piston or a member in rigidly fixed relation thereto when said piston comes closer to the cylinder end on the gas side than a first predetermined distance, said movable member being adapted to actuate a gas shortage warning system when displaced under the action of the thrust exerted by said piston, wherein motion-reversal coupling means working in traction are interposed between said piston and said movable member, and



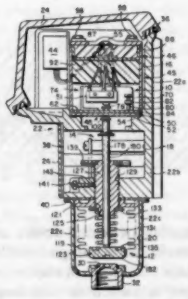
wherein said coupling means have a dead range of travel of predetermined value so that said movable member is also displaced in the same direction as when it is displaced directly under the action thrust exerted by the piston and therefore in the direction of operation of the warning system when said piston moves away from the cylinder end on the gas side beyond a second predetermined distance.

4,243,857

CONTROL DEVICE

Robert D. Reis, Hingham, Mass., assignor to United Electric Controls Company, Watertown, Mass.

Filed Sep. 21, 1978, Ser. No. 944,413
Int. Cl.³ H01H *35/32*
U.S. Cl. 200—83 C **19 Claims**



1. In a control device switch means, a sensor, a kinematic train for transmitting the response of the sensor to a change in ambient condition to effect actuation of the switch means and an enclosure for said compenents comprising the switch means, sensing means and kinematic train, said enclosure being weather-tight and containing chambers within which are, respectively, mounted said switch means, sensing means and a kinematic train, a hermetically-sealed receptacle in the cham-

ber containing the switch means, said switch means comprising two switches, a grounded barrier plate in the chamber containing the hermetically sealed receptacle dividing it into two compartments, each of which contains, in electrical isolation, a terminal block and a conductor therefrom to the switch means in the hermetically-sealed receptacle and means for transmitting operation of the kinematic train to the switch means within the hermetically-sealed receptacle without penetration of the latter.

19. In a control device, an enclosure containing chambers separated by walls, switch means, sensing means and kinematic means mounted in the respective chambers, said chambers separating said components from each other, but permitting access to each independently of the other, a flexibly displaceable wall separating one of the chambers from the others, a flexibly displaceable wall having a flexible portion exposed at one side to the chamber containing the switch means and at its other side to the chamber containing the kinematic means such that actuation of the kinematic means through the intermediary of the flexibly displaceable wall portion will effect operation of the switch means in the chamber containing the switch means, said means being situated between the sensing means and the switch means and means in said kinematic train comprising a Belleville washer actuatable at a predetermined pressure to spring from an inoperative to an operative position and wherein when the pressure drops below said predetermined pressure, the Belleville washer springs back to its inoperative position and means operable by movement of the Belleville washer to said operative position to displace the flexible wall portion.

4,243,858

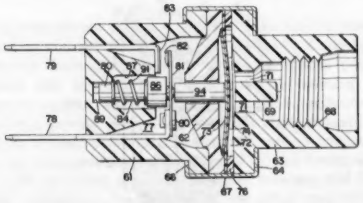
SNAP DISC OPERATED PRESSURE SWITCH

Donald E. Place, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio

Continuation-in-part of Ser. No. 905,887, May 15, 1978, abandoned. This application Jan. 19, 1979, Ser. No. 4,743

Int. Cl.³ H01H *35/34*

U.S. Cl. 200—83 P **10 Claims**



1. A condition sensing switching device comprising a housing, a snap disc means in said housing movable with snap action between two positions of stability in response to predetermined operating conditions, a switch in said housing including a cantilever spring movable contact arm biased toward its switch-closed position, spring-biased operator means in said housing engaging said movable contact arm and operable to apply a spring force thereto in a direction toward a switch-open position moving it to its switch-open position in response to disc means movement to one of said positions of stability, said snap disc means being incapable of applying stress to said movable contact arm in a switch-closed direction while it is in its switch-closed position.

4,243,859

VACUUM SWITCH

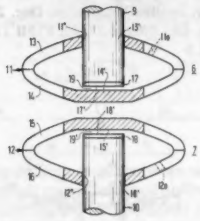
Gerhard Peche, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,310

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1977, 2740994

Int. Cl.³ H01H *33/66*

U.S. Cl. 200—144 B **17 Claims**



1. An improved vacuum switch having a fixed and a movable electrical contact operably mounted in a vacuum housing:

the improvement comprising a pair of deformable contact disks, one mounted at the contact end of each electrical contact;

each of said contact disks having an interconnected top and bottom member with said top member being fixedly attached to the body portion of one of the contacts near the contact end and with each said bottom member being adjacent to but not in contact with a contact surface of the contact end to which said contact disk is fixedly attached and adjacent to but not in contact with said other bottom member when the contacts are separated from one another;

whereby when the contacts are driven toward one another, to close the switch, said bottom members

are brought into contact with one another and said disks deform slightly to permit each of the contact surfaces to move into contact with a said adjacent bottom member, and as the electrical contacts start to move apart, due to the switch opening, the contact surfaces separate from each of said bottom members of said contact disks before said bottom members of said contact disks separate from one another due to each of said disks returning to its undeformed shape.

4,243,860

CIRCUIT INTERRUPTER WITH PRESSURE LIMITING

Masami Kii, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1978, Ser. No. 889,959

Claims priority, application Japan, Mar. 24, 1977, 52-32911; Mar. 24, 1977, 52-32914; Mar. 24, 1977, 52-32924; Mar. 24, 1977, 52-32927; Mar. 24, 1977, 52-32930

Int. Cl.³ H01H *33/70*

U.S. Cl. 200—148 R **3 Claims**

1. A circuit interrupter comprising:

a housing containing an interrupting fluid;

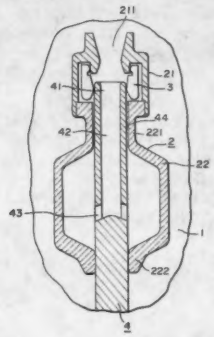
an interrupting chamber in said housing;

a fixed contact in said interrupting chamber;

an elongated movable contact normally located with one end contacting said fixed contact in said interrupting chamber, the remainder of said movable contact extending away from said interrupting chamber in one directional sense with respect to said interrupting chamber;

a pressure chamber disposed adjacent to said interrupting chamber in said one directional sense, said pressure chamber normally surrounding a portion of said movable contact, said pressure chamber communicating with said

interrupting chamber through a first passage, said first passage being normally closed by said movable contact;
a second passage communicating said interrupting chamber with said housing in a directional sense opposite said one directional sense; and



means for moving said movable contact away from said fixed contact in said one directional sense, whereby an arc is formed between said contacts and a portion of said interrupting fluid is pressurized and passes out from said interrupting chamber through said second passage.

4,243,861

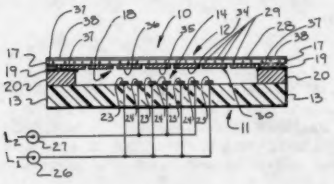
TOUCH SWITCH AND CONTACTOR THEREFOR

Peter Strandwitz, Neenah, Wis., assignor to The Cornelius Company, Anoka, Minn.

Continuation of Ser. No. 809,820, Jun. 24, 1977, abandoned. This application Nov. 20, 1978, Ser. No. 962,540

Int. Cl.³ H01H *13/14, 1/02*

U.S. Cl. 200—159 B **5 Claims**



1. An electrical touch switch, comprising:
(a) an electrically non-conductive base board;
(b) an electrically conductive contact grid upon said board, said grid having
(1) a first circuit pattern having means for electrical connection to a first electrical lead, and
(2) a second circuit pattern electrically isolated and spaced a predetermined distance from said first pattern, and having means for electrical connection to a second electrical lead;
(c) means for securing a contactor sheet to said base board and atop of said grid;
(d) a contactor sheet secured to said board by said securing means, said contactor sheet having an inner surface facing towards, exposed to and spaced from said grid, and being resiliently flexible with respect to said board such that a portion of the contactor sheet facing directly against the grid may be manually depressed for biasing said sheet inner surface toward said grid; and
(e) a plurality of discrete electrically isolated and electrically conductive contactor dots on the inner surface of said contactor sheet and facing directly against said first and second circuit patterns and being normally spaced from said patterns, said contactor dots each having a major distance thereacross which is greater than said predetermined distance between said first and second circuit patterns for providing electrical continuity between said patterns upon physical contact of any one of said contactor dots against said patterns, with every pair of adjacent contactor dots being identically equidistant from each other, and in which a minor distance across each contactor dot is greater than the combined distance of the spacing between said first and second circuit patterns and the width of a contact element of either circuit pattern.

4,243,862

ARC CUTTING DEVICE WITH MECHANICAL MATERIAL REMOVAL

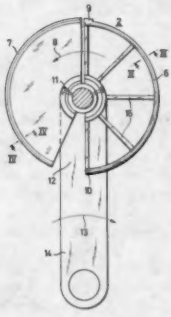
Walter Wetzels, Eynatten, Belgium, assignor to Schumag GmbH, Aachen, Fed. Rep. of Germany

Filed Oct. 6, 1978, Ser. No. 949,150

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1977, 2746241

Int. Cl.³ B23P *1/10*

U.S. Cl. 219—68 **23 Claims**



1. Arc cutting device with a revolving electrode forming an intermittent arc with a workpiece for cutting a groove therein, comprising a revolving narrow disc having a peripheral edge, at least one part of said peripheral edge being on a portion of said disc which is electrically alive for forming the arc, and at least another part of said peripheral edge being on a portion of said disc which is electrically dead for mechanically carrying away material that is to be removed from the cutting groove formed in the workpiece being cut by the arc.

4,243,863

ELECTRICAL DISCHARGE MACHINING APPARATUS WITH SIMULTANEOUS RELATIVE ADVANCE AND CYCLIC TRANSLATIONAL MOVEMENT OF THE ELECTRODES

Georges Wyss, Niederrohrdorf, Switzerland, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Division of Ser. No. 696,712, Jun. 16, 1976, Pat. No. 4,104,500, and Ser. No. 696,713, Jun. 16, 1976, Pat. No. 4,104,501. This application Jul. 3, 1978, Ser. No. 921,784

Claims priority, application Switzerland, Jun. 18, 1975, 7932/75

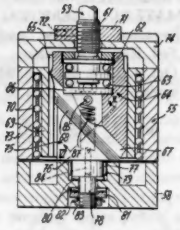
The portion of the term of this patent subsequent to Aug. 1, 1995, has been disclaimed.

Int. Cl.³ B23P *1/12*

U.S. Cl. 219—69 V **11 Claims**

1. In an electrical discharge machining arrangement for machining the surface of a recess in a workpiece electrode, in which relative movements of the electrodes are controlled to maintain given sparking conditions in a machining zone com-

prised between the electrodes, and comprising a device for controlling a translational displacement of one electrode relative to the other both in the direction of an axis of penetration of one of said electrodes into the other electrode and in a plane perpendicular to said axis, said device comprising a support for said one electrode, first means for moving the support in translation along said axis, and second means for moving the support in translation according to a predetermined amplitude in a plane perpendicular to said axis to provide a combined translational movement of the support along said axis and in said perpendicular plane, said second means comprising an eccentric member having, parallel to said axis of penetration, an axis in relation to which said support is fixed in position, the improvement comprising a rotatable shaft having an axis parallel



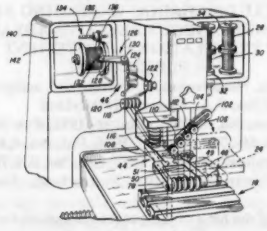
to said axis of penetration, said eccentric member cooperating with said shaft for sliding in relation to said shaft in a direction forming an angle with said axis of penetration and for rotating with said shaft about the axis of said shaft, means for sliding said eccentric member relative to said shaft in response to movement of the support along said axis by said first means such that the amplitude of said translation of said support in said plane progressively varies as a function of the translational movement along said axis beyond a predetermined distance, wherein said eccentric member and said shaft have facing faces, linear guide means are disposed between said facing faces allowing sliding of said facing faces relative to one another along said direction, and means are provided for holding said eccentric member and shaft together while allowing relative radial and axial displacements therebetween.

4,243,864

MULTIPLE WIRE ELECTRODE FEED MECHANISM FOR ELECTROEROSION MACHINE

Richard R. Vieau, 314 S. Emerson, Itasca, Ill. 60143, and Robert A. Vieau, 315 E. Berkshire, Roselle, Ill. 60172

Filed Jan. 15, 1979, Ser. No. 3,115
Int. Cl.³ B23P *1/02*
U.S. Cl. 219—69 W **12 Claims**



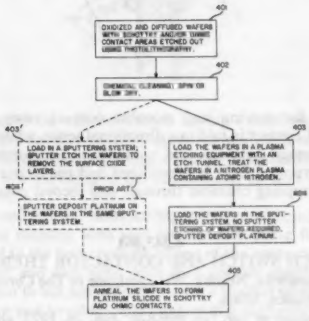
1. In an electroerosion machine which cuts a metal by means of electrical discharge between an electrically conductive wire and metal, said machine having a frame, a table for carrying metal movably mounted on the frame, a head mounted on the frame, and an electrical system connected to the electrically conductive wire and the metal, the improvement comprising; a plurality of supply spools of electrically conductive wire, each of said supply spools having a wire continuously removed therefrom, a tension assembly receiving a wire from each of the supply spools, a cutting guide assembly receiving each of said wires and holding the wires parallel to each other adjacent to the metal while there is electrical discharge between each of the wires and the metal, and a take-up assembly receiving the wires from the cutting guide assembly.

4,243,865

PROCESS FOR TREATING MATERIAL IN PLASMA ENVIRONMENT

Arjun N. Saxena, Palo Alto, Calif., assignor to Data General Corporation, Westboro, Mass.

Filed May 14, 1976, Ser. No. 684,206
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—121 P **2 Claims**


401
OXIDIZED AND DIFFUSED WAFERS WITH SCHOTTKY AND/OR OHMIC CONTACT AREAS ETCHED OUT USING THERMAL/PHOTOGRAPHY.
402
CHEMICAL CLEANING, SPIN OR BLOW DRY.
403'
403
LOAD IN A SPUTTERING SYSTEM, SPUTTER ETCH THE WAFERS TO REMOVE THE SURFACE OXIDE LAYERS.
LOAD THE WAFERS IN A PLASMA ETCHING EQUIPMENT WITH AN ETCH TUNNEL, TREAT THE WAFERS IN A NITROGEN PLASMA CONTAINING ATOMIC NITROGEN.
PRIOR ART
405'
SPUTTER DEPOSIT PLATINUM ON THE WAFERS IN THE SAME SPUTTERING SYSTEM.
405
LOAD THE WAFERS IN THE SPUTTERING SYSTEM. NO SPUTTER ETCHING OF WAFERS REQUIRED. SPUTTER DEPOSIT PLATINUM.
406
ANNEAL THE WAFERS TO FORM PLATINUM SILICIDE IN SCHOTTKY AND OHMIC CONTACTS.

1. A process for passivating the surface of a semiconductor material in a plasma environment comprising the step of:

exposing the material to a gaseous plasma consisting of atomic, neutral nitrogen to obtain said passivated surface on said material, said surface being free from nascent oxide.

4,243,866

METHOD AND APPARATUS FOR FORMING A VARIABLE SIZE ELECTRON BEAM

Hans C. Pfeiffer, Ridgefield, Conn.; Philip M. Ryan, Hopewell Junction, and Edward V. Weber, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 771,235, Feb. 23, 1977, abandoned.
This application Jan. 11, 1979, Ser. No. 2,499
Int. Cl.³ B23K *15/00*; **G21K** *1/08*
U.S. Cl. 219—121 EK **28 Claims**

1. In electron beam apparatus having a source of electrons for providing an electron beam adapted for generating integrated circuit patterns upon a target positioned in a target area toward which said electron beam is directed, electron beam forming means along the path from said source to said target area comprising:

a first beam shaping member having a first spot shaping aperture formed therein,

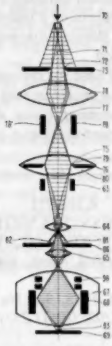
a second beam shaping member having a second spot shaping aperture formed therein;

means for focusing the image of said first aperture in the plane of said second spot shaping aperture to thereby form a composite spot shape defined by said image and said second aperture,

means for focusing the image of said composite spot in the plane of said target,

means for focusing the image of said source in a plane between said source and said image of said first aperture,

means for deflecting said electron beam, so as to deflect said image of said first aperture laterally with respect to said second aperture to thereby vary the shape and dimensions of said composite spot selectively to enable imaging of variable shapes upon said target, and



means for locating the focused image of said source in a plane substantially perpendicular to said path and coincident with the virtual center of said deflection.

4,243,867

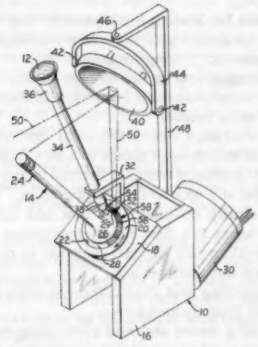
APPARATUS FOR FUSIBLY BONDING A COATING MATERIAL TO A METAL ARTICLE

Michael Earle, Mapleton, and Glenn H. Lenzen, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 543,191, Jan. 24, 1975, Pat. No. 4,117,302, which is a continuation-in-part of Ser. No. 447,971, Mar. 4, 1974, abandoned. This application Jun. 26, 1978, Ser. No. 919,349

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LC **7 Claims**



1. An apparatus for fusibly bonding a substantially solid powder coating material to a metal article, comprising:

a frame;

holding means for supporting the article and for moving the article at a preselected rate relative to the frame;

depositing means for metering and depositing the substantially solid powder coating material onto a surface of the article in the form of a levelled band of powder in response to movement of the article by the holding means; and

laser beam means for liquifying a portion of the band of powder and thereafter liquifying the juxtaposed surface of the article, controlling the heat transmission into said article, thereafter rapidly hardening a trailing part of the liquified portion of the band of powder while progressively moving the band of powder past the laser beam means, and generating a surface layer having properties based substantially solely on the coating material and a relatively thin, strong region of interstitial bond between the surface layer and the article.

4,243,868

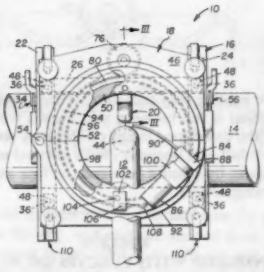
ORBITAL ARC-WELDING APPARATUS OF SPLIT CONSTRUCTION

Weldon C. Graham, San Diego, Calif., assignor to General Atomic Company, San Diego, Calif.

Filed May 2, 1979, Ser. No. 35,226

Int. Cl.³ B23K *9/02, 9/12*

U.S. Cl. 219—125.11 **8 Claims**



1. Welding apparatus for welding a tube to a sidewall opening in a larger pipe or the like and facilitating removal of the welding apparatus after completion of the weld, comprising

a locating fixture including clamping means for securing the locating fixture to a pipe adjacent the side opening in the pipe, and

a welding head adapted for mounting upon the locating fixture to weld a tube to the pipe with the tube being in communication with the interior of the pipe through the sidewall opening, the welding head including

orbital guide means of split construction to facilitate its assembly and disassembly in coaxial relation to the tube,

means for securing the orbital guide means to the locating fixture in coaxial alignment with the tube, a welding torch assembly mounted upon the orbital guide means and positioned for effecting a weld between the tube and pipe, and

means for rotating the welding torch assembly upon the orbital guide means and for operating the welding torch to complete the weld between the tube and pipe.

4,243,869

FUSING DEVICE FOR ELECTROSTATIC COPIER

Albert W. Scribner, Darien, Conn., assignor to Pitney Bowes, Inc., Stamford, Conn.

Filed May 16, 1979, Ser. No. 39,473

Int. Cl.³ H05B *1/00;* **G03G** *15/00*

U.S. Cl. 219—216 **15 Claims**

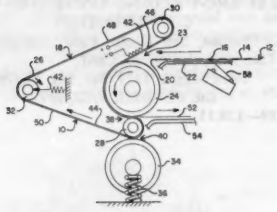
1. A fusing apparatus for applying pressure and heat to an unfused copy sheet bearing a developed electrostatic image on at least one surface thereof in order to fuse the image on the copy sheet, comprising:

first and second, oppositely driven, mutually biased, pressure fixing feed rollers:

a third roller laterally supporting the first and second pressure fixing rollers and driven oppositely from said second roller;

a flexible, thermally conductive web for contacting the image bearing surface of said copy sheet, said web disposed about and contacting a portion of said first roller and passing through a first nip defined by the first and

second rollers, said web being further disposed about and contacting the portion of the second roller between the first nip and a second nip defined by the second and third rollers in an opposite direction from the contact with said first roller, wherein the area of contact between the web and the first roller defines a concave path for the unfused copy sheet; and



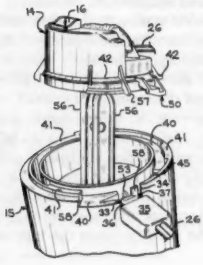
means for heating only said web, whereby when the unfused copy sheet is fed between said heated web and said first roller, the developed image on the copy sheet is gradually melted until said image is finally pressed and fixed on the copy sheet by passing between the first and second pressure fixing rollers.

4,243,870

VAPORIZER WITH ELECTRODE HOUSING INTERLOCK

Thomas E. Grime, Temperance, Mich., and Frank A. Robinson, Jr., Toledo, Ohio, assignors to Champion Spark Plug Company, Toledo, Ohio

Filed Feb. 9, 1978, Ser. No. 876,467
Int. Cl.³ H05B *3/60;* B65D *55/02;* E05B *11/00*
U.S. Cl. 219—295 **6 Claims**



1. An electrical device comprising:

a base containing an exposed electrical element, said base having a series of spaced projections and a stop member located thereon;

a removable protective sleeve enclosing said electrical element and having a series of spaced lips located thereon, said lips adapted to be brought into mating relationship with said projections on said base by movement of said base and said protective sleeve relative to each other, said lips engaging said projections on said base to secure said protective sleeve to said base, said protective sleeve defining at least one aperture;

an integral resilient interlock member positioned on the interior of said protective sleeve in alignment with the sleeve aperture, said integral interlock member engaging said stop member to prevent relative movement between said base and said sleeve, thereby precluding disengagement of said projections and lips once said protective sleeve has been secured to said base;

key means for insertion into the aperture on said protective sleeve to contact and deflect said resilient interlock member from engagement with said stop member on said base to allow relative movement between said base and said sleeve, thereby allowing removal of said protective sleeve from said base by disengagement of said projection and said lips, said key means defining a locking recess, and

key locking means comprising a releasable spring-biased pin positioned on said sleeve adjacent the aperture in said protective sleeve; and

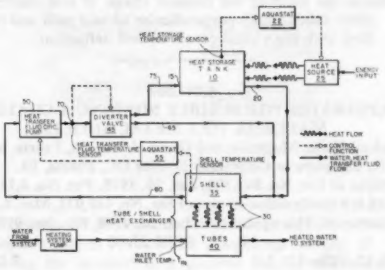
actuator means on said base for releasing said spring-bias pin to engage the locking recess in said key means in response to said interlock member being deflected by said key means and said protective sleeve being disengaged from said base.

4,243,871

FLUID HEATING SYSTEM WITH STORAGE OF ELECTRIC HEAT

James L. McKenney, Norwell, Mass., assignor to Vapor Corporation, Chicago, Ill.

Filed Jan. 3, 1978, Ser. No. 866,554
Int. Cl.³ H05B *1/02;* G05D *23/13;* F24H *7/04*
U.S. Cl. 219—326 **16 Claims**



1. Apparatus for heating liquids and having heat storage at temperature substantially different from said liquid comprising;

storage means for storing heat;

means admitting heat to said storage means;

a fluid for transferring heat between said storage means and a liquid to be heated;

first heat exchange means thermally communicating said fluid with said storage means at a first fluid temperature;

second heat exchange means in thermal communication with said liquid at a second fluid temperature;

means thermally coupling said first and second heat exchange means at a third fluid temperature;

means activating said thermal coupling in response to said third fluid temperature; and

means controlling said fluid communication in response to said third fluid temperature;

said activating means and said controlling means being so constructed and arranged that, in sequence, said activating means establishes thermal coupling between said first and second heat exchange means prior to establishment of thermal communication between said storage means and fluid, thereby allowing utilization of stored heat without flashing of said liquid in said second heat exchange means.

4,243,872

ELECTRICAL HEATING ELEMENT

Lorne A. Best, West Bloomfield, Mich., assignor to National Element, Inc., Troy, Mich.

Filed Mar. 14, 1979, Ser. No. 20,594
Int. Cl.³ H05B *3/00*
U.S. Cl. 219—375 **1 Claim**

1. An improved electrical heating element providing for an

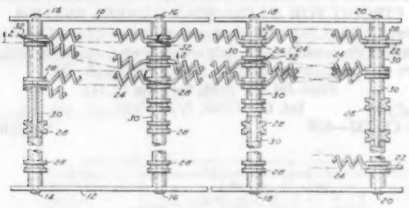
increased amount of electrical wire per unit space for plug-type convection heaters comprising:

an elongated generally rectangular-shaped metal frame structure opened at its ends and having a pair of laterally spaced apart support elements defining the longer sides of the rectangle, each support element extending parallel to the direction of the longitudinal axis of the frame structure and being of generally rectangular transverse cross section throughout its longitudinal extent;

a pair of removable end rods made from metal extending through said support elements from one side of the frame structure to the other side thereof in a direction generally perpendicular to the longitudinal axis of the structure;

a plurality of removable intermediate rods made from metal located between and arranged parallel to said pair of end rods, said intermediate rods extending through said support elements from said one side of the frame structure to the other side; the spacing between a pair of adjacent rods being equal to provide for air flow therethrough;

fastening means carried by said support elements for removably connecting said end and intermediate rods to said support elements;



a plurality of ceramic spools each of circular configuration spaced along each of said end and intermediate rods; each spool being provided with an annular endless groove midway between the end faces thereof; each of the end faces of each spool being provided with an annular recess forming an abutment stop surface; each spool having a centrally located opening through said end faces through which the corresponding metal rod extends;

a plurality of ceramic insulating spacers on each of said end and intermediate rods, each spacer being of generally cylindrical configuration and having an axially extending bore so that the spacer may be slidably attached along one of said intermediate and metal rods; a pair of said spacers being positioned on opposite sides of said spools to space said spools from said support elements; the end portion of a spacer opposite a spool being received in the annular recess and abutting the corresponding abutment stop surface;

a continuous electrical resistance heating wire having coil wound segments separated by straight wire segments, with the straight wire segments of said wire being located and retained in the grooves of said spools; and clamping retaining wires for tying the straight wire segments of said wire to said spools.

4,243,873

COMPATIBLE CERAMIC ELECTRIC HEATER FOR FOOD HANDLING VESSELS

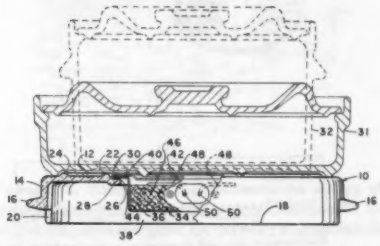
Paul E. Helgesen, Seven Valleys, Pa., assignor to Susquehanna Broadcasting Co., York, Pa.

Filed Jan. 29, 1979, Ser. No. 7,421

Int. Cl.³ H05B *3/68*

U.S. Cl. 219—386 **2 Claims**

1. An electrical heating device for use in heating an article of a compatible set of ceramic food preparation and serving vessels of various shapes and kinds, said heating device comprising in combination, a unitary ceramic base having a horizontal top and depending sides provided with an aesthetic finish similar to and compatible with ceramic vessels of a compatible set thereof, an opening in said top of smaller diameter than said top and including a peripheral seat spaced below the upper surface of said top and said top also having a plurality of radially spaced short annular ridges having rounded surfaces and being concentric with said opening and the innermost ridge comprising a wall of said seat, an electrical resistance heating unit connectable to a source of electric current to cause the same to generate heat, said unit having a cup-shaped metallic shell substantially complementary in size to said opening and seat in said top of said base and also having the upper end of said shell terminating in a laterally extending peripheral flange



engaging and resting upon said seat in said base by gravity to support said unit thereby, and said cup-shaped shell also being closed by a flat metal top secured to said flange and having an upper surface no higher than said innermost ridge of said ceramic base and having a heating element therein adjacent the inner surface of said metal top and disposed on top of insulation in said shell to afford maximum efficiency of heating and insulation, said unit being readily separable from said base without the use of tools by simply lifting it from said seat in said base to permit cleansing of said base when said unit is removed therefrom.

4,243,874

RADIANT HEATING UNIT

Karl Fischer, Am Gaensberg 8, 7519 Oberderdingen, Fed. Rep. of Germany

Filed Jun. 22, 1978, Ser. No. 918,300

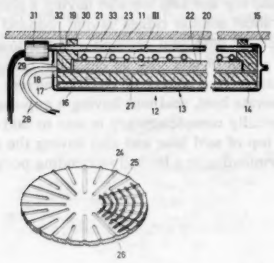
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 2729929; May 9, 1978, 2820138

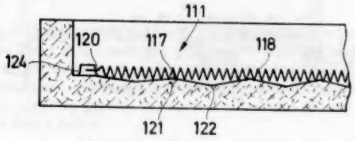
Int. Cl.³ H05B *3/74, 3/76*

U.S. Cl. 219—467 **36 Claims**

1. A radiant heating unit comprising an insulating support which is substantially plate-shaped in a heating region and heating resistances arranged on the insulating support, the insulating support having elevations shaped from it and the heating resistances being partially embedded within the insu-

lating support, only at the elevations, and unembedded elsewhere on the surface of the insulating support, the elevations





being spaced from one another in the longitudinal direction of the heating resistances.

4,243,875

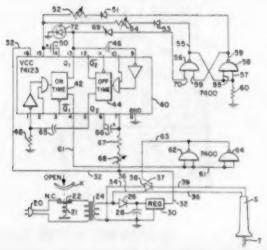
TEMPERATURE CONTROL FOR RESISTANCE HEATING ELEMENT

Daniel C. Chang, 110-22 64th Rd., Forest Hills, N.Y. 11375

Filed Nov. 13, 1978, Ser. No. 959,809

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—497 **2 Claims**



1. A control circuit for controlling the temperature of an electric soldering iron including a cradle-operated switch for connecting a power supply to the circuit when the iron is raised from the cradle and disconnecting the supply when the iron rests on the cradle, the control circuit comprising:

(a) an ON/OFF switching member connecting the power supply to the soldering iron and enabling the flow of current thereto when conductive;

(b) a first monostable means having a stable state and a non-stable state and connected to render said ON/OFF switching member conductive when in said non-stable state, said first monostable means having two separate time constants each energizable separately from the other to determine when energized a longer and a shorter duration of said non-stable state;

(c) a second monostable means having a stable state and a non-stable state of constant duration, the first and second monostable means being mutually interconnected and operative so that as each returns to its stable state it triggers the other to begin its non-stable state;

(d) a bistable flip-flop having two stable states and having two output terminals respectively connected to said two separate time constants of the first monostable means, and the flip-flop having separate input terminals for triggering the flip-flop into one or the other of its stable states, one of said inputs being operative upon raising of the iron from the cradle and closing of said switch connecting the power supply to the circuit to energize the longer duration time constant, and the other input being coupled to the first monostable means to be triggered by the return thereof to stable state to trigger the flip-flop to energize the shorter duration time constant as long as the iron remains raised from the cradle, brief manual depressing of the cradle and release thereof actuating said one input to trigger the flip-flop to re-energize the longer time constant and raise the operating temperature of the iron.

4,243,876

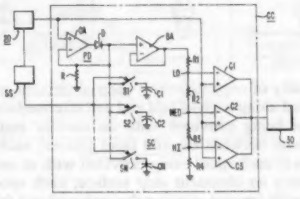
BACKGROUND LIGHT INTENSITY COMPENSATION CIRCUIT FOR A LINE SCAN CAMERA SYSTEM

Joseph C. Engel, Monroeville; Leonard C. Vercellotti, Oakmont, both of Pa., and Dale W. Schroeder, Iowa City, Iowa, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 25, 1979, Ser. No. 60,511

Int. Cl.³ G06K *7/14, 7/10*

U.S. Cl. 235—455 **12 Claims**



1. A method for compensating a document scanning system for variations in background and ambient light conditions and/or aberrations produced by optics associated with a scanning device employed by the system to extract information on a line-by-line basis from a document, comprising the steps of,

scanning said document on a line-by-line basis with a scanning device, said device generating a scan line output signal which is a function of the light intensity of the scan line,

storing peak signal levels of each of a predetermined number of segments of a scan line output signal, and

comparing the scan line output signals of said document to the corresponding stored peak signal levels to compensate said scan line output signals on a segment-by-segment basis for variations in document background light conditions and/or lens vignetting.

4,243,877

ELECTRO-OPTICAL TARGET FOR AN OPTICAL ALIGNMENT SYSTEM

Jose C. Cruz, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Filed Mar. 5, 1979, Ser. No. 17,434

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201 **12 Claims**

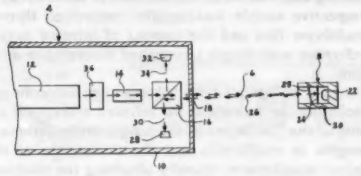
1. Apparatus for optically determining the translational and rotational orientation of portions of an object with respect to a system reference position, comprising

(a) a base means for defining a system reference position when mounted on a stable support,

(b) an optical beam forming means mounted on said base

mean for forming and projecting an optical beam along an optical axis having a predetermined relationship with the system reference position, and

(c) target means for receiving the optical beam when mounted on the object and for redirecting a first portion



of said beam to indicate the rotational position of the target means relative to the system reference position and for producing an electrical signal indicative of the translational position of the target means relative to the system reference position.

4,243,878

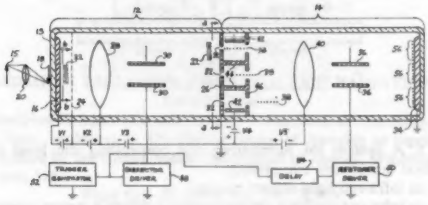
ULTRA-FAST FRAMING CAMERA TUBE

Ralph Kalibjian, 1051 Batavia Ave., Livermore, Calif. 94550

Filed Jul. 7, 1977, Ser. No. 813,762

Int. Cl.[2] H01U *31/50*

U.S. Cl. 250—213 VT **14 Claims**



9. An ultra-fast framing camera tube, comprising the following combination housed within an evacuated envelope:

(a) a photoemissive cathode for converting an incident time-varying photon image into a corresponding time-varying electron density image;

(b) an aperture plate having a plurality of slits therein;

(c) means for focusing said time-varying electron density image onto said aperture plate, said focusing means being maintained at a negative voltage with respect to said aperture plate;

(d) means for sweeping said focused time-varying electron density image across the slits in said aperture plate, thereby forming a time-sequential series of electron line-images;

(e) means for restoring said time-sequential electron line-images into two-dimensional electron framed images; and

(f) means for displaying said electron framed images in a form suitable for recording.

4,243,879

TOUCH PANEL WITH AMBIENT LIGHT SAMPLING

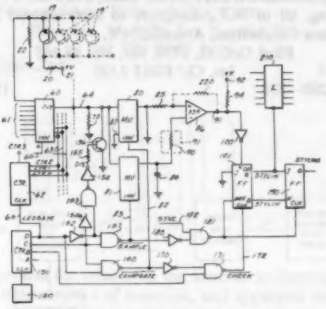
Arthur B. Carroll, St. Joseph; Vladeta D. Lazarevich, Bondville, and Mark R. Gardner, Champaign, all of Ill., assignors to Carroll Manufacturing Corporation, Champaign, Ill.

Filed Apr. 24, 1978, Ser. No. 899,258

Int. Cl.[3] G01V *9/04*

U.S. Cl. 250—221 **22 Claims**

1. In a touch input device having a panel and means for defining a plurality of beams of radiant energy arranged parallel to the panel, each of said beams being defined by an energy emitter and an energy detector, the improvement comprising sampling means for sampling the ambient output level of one of said detectors immediately prior to the energization of its associated emitter, storage means for temporarily storing a signal representative of said ambient output level, and compar-



ator means for comparing the instantaneous output of said detector with said stored signal during a subsequent interval while said emitter is energized for deriving a signal manifesting the interruption or noninterruption of said beam.

4,243,880

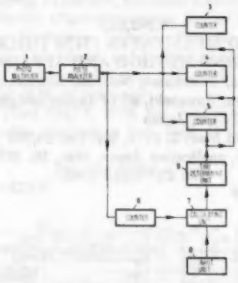
METHOD FOR MEASURING TIME DETERMINATION IN A RADIATION MEASURING INSTRUMENT

Roger P. Ekins, Dorking, England, and Erkki Soini, Turku, Finland, assignors to LKB-Produkter AB, Bromma, Sweden

Filed Jan. 18, 1978, Ser. No. 870,571

Int. Cl.[2] G01D *18/00;* **G01T** *1/00, 1/20*

U.S. Cl. 250—252 **3 Claims**



1. Method for determining the total measuring time t necessary for measuring the radiation from a specific radioactive sample with an instrument which registers the electrical pulses produced by radioactive decay of a sample, comprising the steps of:

counting said electrical pulses for a period of time considerably shorter than the measuring time required but long enough to register a number of pulses for estimating the time t;

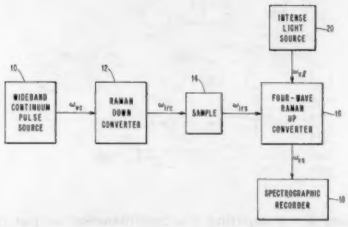
Calibrating the instrument which registers the pulse by the channels ratio method using two channels of a standard radiation source to obtain the experimental error, and;

Obtaining a value for time t as a function of the member of pulses from the count produced by the samples and as a function of the experimental error.

4,243,881
TIME-RESOLVED INFRARED SPECTRAL PHOTOGRAPHY

Donald S. Bethune, Mount Kisco; John R. Lankard, Jefferson Valley; Michael M. Loy, Mount Kisco, and Peter P. Sorokin, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1979, Ser. No. 84,245
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—338 **11 Claims**



1. Apparatus for recording a spectrum produced by interacting a light beam with a sample, comprising:

a first intense light source for producing a first continuum light beam;

a Raman down converter cell responsive to said first continuum beam for generating a second continuum light beam of lower frequency;

means for irradiating a sample with said second continuum beam to produce a third interaction beam carrying spectral information;

a second intense light source for producing a fourth light beam;

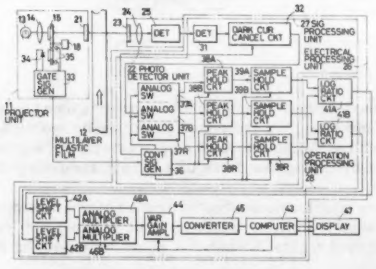
a four-wave Raman up converter cell responsive to said fourth light beam and to said third interaction beam for generating a final fifth light beam of higher frequency carrying the same spectral information; and

means for recording said final fifth beam.

4,243,882
INFRARED MULTILAYER FILM THICKNESS MEASURING METHOD AND APPARATUS

Akitaka Yasujima, Yokohama; Naoyuki Shiratori, Tokyo, and Shingo Ishikawa, Kawasaki, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 16,754
Claims priority, application Japan, Mar. 10, 1978, 53/266
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—339 **21 Claims**



1. An infrared multilayered film thickness measuring method comprising the steps of:

projecting an infrared ray including a plurality of sample wavelengths and at least one reference wavelength onto a composite multilayer film or sheet composed of a plurality of film layers of different synthetic resins, the infrared absorption wavelengths of each of the film layers coinciding with at least one of the sample wavelengths and the reference wavelength being selected not to coincide with the inirared absorption wavelength of each film layer;

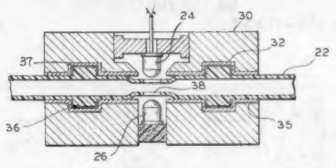
obtaining ratios between the amounts of infrared rays of the respective sample wavelengths transmitted through the multilayer film and the amount of infrared rays of the reference wavelength transmitted through the multilayer film;

performing an operation for solving a simultaneous equation including the ratios and the infrared absorption coefficients of the film layers at the sample and reference wavelengths as coefficients and the thicknesses of the film layers as unknowns, thereby obtaining the thicknesses of the film layers.

4,243,883
BLOOD HEMATOCRIT MONITORING SYSTEM

Frank Schwarzmann, Colgate, Wis., assignor to Midwest Cardiovascular Institute Foundation, Wauwatosa, Wis.

Filed Jan. 19, 1979, Ser. No. 4,758
Int. Cl.³ G01J *1/00*; G01N *33/48*
U.S. Cl. 250—343 **11 Claims**



1. A system for monitoring and controlling the level of blood hematocrit comprising:

an infra-red light source means;

an infra-red sensitive photo-transistor detector means opposing said light source means, said detector means being selected so as to produce a change in voltage dependent upon the amount of light impinging thereupon and having a spectral sensitivity at the wavelength of the light source means;

lumen means intermediate said light source means and said detector means, said lumen means being substantially optically transparent to the light emitted by said light source means; and

meter means responsive to the voltage emitted from said detector means for indicating the quantity of hematocrit within a moving column of blood when said column is passed through said lumen means;

a three-way valve means downstream of said detector means and said light source means, said valve means being coupled to said lumen means, a first outlet of said valve means and a second outlet from said valve means; and

means within said meter means for causing blood to flow from said lumen means to said first outlet when the blood hematocrit level is above a preselected value and to flow from said lumen to said second outlet when the blood hematocrit level is below said preselected value.

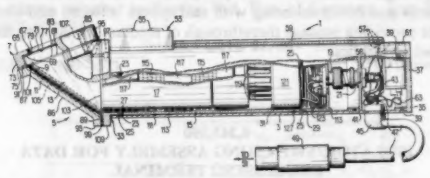
4,243,884
PROBE ASSEMBLY

C. Bert Avera, Jr., Cincinnati, Ohio, assignor to Actus, Inc., Florence, Ky.

Filed Nov. 9, 1978, Ser. No. 959,243
Int. Cl.² G01T *1/20*
U.S. Cl. 250—361 R **32 Claims**

1. A hand-held radiation monitor probe assembly comprising a substantially cylindrically shaped probe handle having an

open end, a substantially cylindrically shaped probe body positioned within said probe handle through the open end of the probe handle, supporting means for supporting said probe body within said probe handle, wherein said probe body is freely rotatable within said probe handle, and removable therefrom, a probe head fixedly connected to said probe body, an



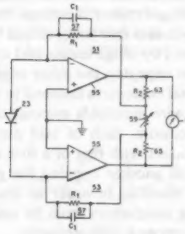
optical coupler supported within said probe head, a detecting crystal for detecting radiation and for converting the radiation to light, and means for supporting said detecting crystal adjacent said optical coupler, wherein a face of said detecting crystal is at an angle with respect to the major axis of the cylindrically shaped probe body.

4,243,885

CADMIUM TELLURIDE PHOTOVOLTAIC RADIATION DETECTOR

Dimitrios C. Agouridis, and Richard J. Fox, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 25, 1979, Ser. No. 78,759
Int. Cl.³ G01T *1/24*
U.S. Cl. 250—370 **4 Claims**



1. A radiation dosimeter for detecting low-level ionizing radiation comprising:

a photovoltaic semiconductor diode-detecting element including a thin wafer of chlorine-doped cadmium telluride p-type semiconductor material having a front radiation-receiving surface and a rear surface, a film of n-type material coating said front surface of said wafer forming a p-n photovoltaic junction and an electrically conductive film coating said rear surface forming a current collector;

a current-to-voltage converter means for converting a photocurrent generated by said detecting element when placed in an ionizing radiation flux to a voltage at the output thereof proportional to the radiation dose rate; and

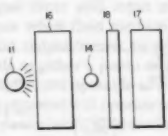
means for measuring said output voltage of said connecter means.

4,243,886

APPARATUS AND METHOD FOR THE MEASUREMENT OF NEUTRON MODERATING OR ABSORBING PROPERTIES OF OBJECTS

Samuel Untermyer, II, Portola Valley, Calif., assignor to National Nuclear Corp., Redwood City, Calif.

Filed Jun. 19, 1978, Ser. No. 916,873
Int. Cl.² G01T *3/00*
U.S. Cl. 250—390 **11 Claims**



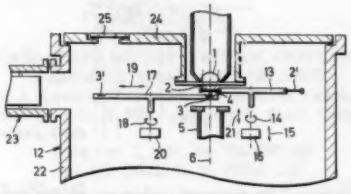
1. Apparatus for measuring the neutron moderation or absorption charateristics of materials, said apparatus adapted to be disposed entirely on one side of said materials comprising a source of fast neutrons, thermal neutron detecting means adapted to be disposed adjacent said materials, thermal neutron absorbing material disposed between the source of fast neutrons and said thermal neutron detecting means for passing fast neutrons to said materials, and means connected to said detecting means to provide an indication of the number of thermal neutrons received from said materials by said detecting means.

4,243,887

PROCESS AND APPARATUS FOR ANALYZING A SAMPLE WITH THE AID OF PULSED LASER IRRADIATION

Franz Hillenkamp, Frankfurt; Raimund Kaufmann, Düsseldorf; Eberhard Unsöld, Oberschleissheim; Rainer Nietsche, Frankfurt; Reiner Wechsung, Cologne; Henning Vogt, Cologne; Walter Bank, Cologne In, and Lothar Aberle, Sindorf, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed May 1, 1979, Ser. No. 35,089
Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819711
Int. Cl.³ H01J *27/00*
U.S. Cl. 250—423 P **16 Claims**



1. A method of analyzing a sample comprising the steps of:

irradiating a selected area of said sample with a first burst of energy from a pulsed laser, said selected area being vaporized by the energy impinging thereon;

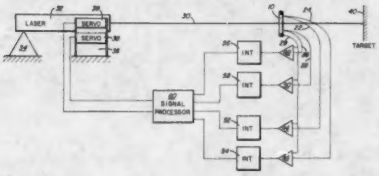
condensing the vaporized sample material on the surface of an intermediate carrier; and

analyzing the condensed sample material deposited on said intermediate carrier.

4,243,888
LASER BEAM ALIGNMENT APPARATUS AND METHOD

Charles R. Gruhn, Martinez, Calif., and Robert B. Hammond, Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 10, 1979, Ser. No. 37,982
Int. Cl.³ G01N *21/00, 23/00*
U.S. Cl. 250—491 **11 Claims**



1. A method for determining the alignment of a laser beam comprising the steps of:

intercepting the beam with a planar material substantially incident perpendicular thereto, said material having thermoelectric properties and a known placement relative to the laser, the material having a plurality of ohmic electrical contacts disposed on a surface thereof at selected locations, the contacts being operably connected to electrical conductors, the beam producing thermoelectric effects from pulsed heat diffusion in the material;

carrying voltage signals representative of the thermoelectric effects in the material through the conductors within no more than about 100 milliseconds;

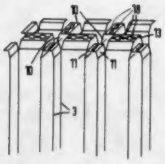
integrating the thermoelectric voltage signals over a selected period of time; and

processing the integrated voltage signals to provide an output representative of the beam's position on the surface of the material.

4,243,889
STORAGE RACK FOR ELONGATED FUEL ASSEMBLIES

Robert Weber, Uttenreuth, Fed. Rep. of Germany, assignor to Kraftwerk Union AG, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Nov. 24, 1978, Ser. No. 963,230
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1977, 2753468
Int. Cl.² G21F *5/00*
U.S. Cl. 250—507 **4 Claims**

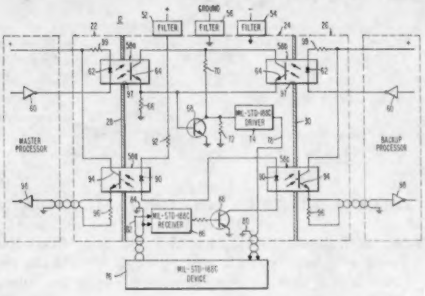


1. Storage rack for elongated nuclear reactor-fuel assemblies having a polygonal cross section comprising an array of elongated sheetmetal shells of corresponding polygonal cross section for receiving respective fuel assemblies therein at locations of the rack at which the fuel assemblies are to be positioned, said shells being spaced from one another and neutron-absorbing material of given thickness being disposed in the space therebetween, an inlet funnel being formed of bent, upper marginal portions of the respective sheetmetal shells, mutually adjacent shells of said array having the bent, upper marginal portions thereof facing edgewise towards one another and, being directly connected to one another by a weld only at the respective edges of said marginal portions, said space between said shells being greater than said given thickness of said neutron-absorbing material and being bridged at said weld connection, for the most part, by sheetmetal extending transversely to the longitudinal direction of said shells, and means defining openings at corners of the polygonal cross sections of said shells and communicating with said spaces between said shell for providing passage therethrough of medium for cooling the fuel assemblies.

4,243,890
ISOLATOR/SWITCHING ASSEMBLY FOR DATA PROCESSING TERMINAL

Bruce J. Miller, 13 Doe La., Malvern, Pa. 19355; Gus C. Gadonas, R.D. #2, Phoenixville, Pa. 19460, and Frank C. Donofrio, 720 Buttonwood St., Norristown, Pa. 19401

Filed Aug. 23, 1976, Ser. No. 717,001
Int. Cl.³ G02B *27/00*; H05K *5/00*
U.S. Cl. 250—551 **9 Claims**



1. An isolator/switching assebly for permitting confidential communications among a plurality of electronic data processors and a common peripheral device comprising:

at least one metal box-like isolator/switching unit having a plurality of compartments separated from each other by metal bulkheads, said unit being closed by a lid fastened to one edge thereof by hinge means and clamped to the unit by latch means engaging the other edge thereof;

a plurality of metal enclosures fastened to said unit including a plurality of wire manifolds associated respectivey with said data processors, each of said manifolds having an opening coincident with that of a first-type compartment of said unit and another opening for providing external access to the manifold in order to convey a first set of signal carrying conductors from its associated processor to said last mentioned compartment;

a second-type compartment of said unit having an opening therein for permitting the entry therethrough of a second set of signal carrying conductors coupled to said peripheral device;

a plurality of optical couplers mounted respectively in apertures formed in said bulkheads, the input leads of each coupler associated with its light source and the output leads thereof associated with its light sensor being situated on opposite sides of said bulkhead within respective adjacent compartments of said unit;

said first and second sets of signal carrying conductors being electrically coupled to predetermined leads of said optical couplers to effect communications among said processors and said common peripheral device while maintaining the electrical isolation of said compartments from one another.

4,243,891

APPARATUS FOR DETECTING HOLES IN WEBS OF PHOTOGRAPHIC PAPER OR THE LIKE

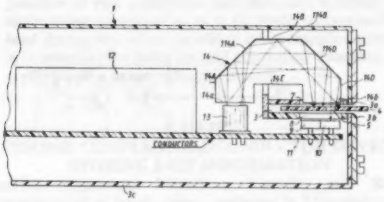
Rudolf Dobler, Fürstenfeldbruck, and Klaus Weber, Leverkusen, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jun. 26, 1978, Ser. No. 919,286

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1977, 2728728

Int. Cl.³ G01K 21/86

U.S. Cl. 250—571 18 Claims



1. Apparatus for scanning a running web for the presence of holes, particularly for monitoring a web of exposed and developed photographic paper for the presence of holes which are associated with successive prints, comprising means for advancing the web lengthwise along a predetermined path; photoconductive detector means adjacent to one side of said path; a light source remote from and located at said one side of said path; and means for optically coupling said source with said detector means, said coupling means having a light admitting portion adjacent to said source and a light emitting portion located opposite said detector means at the other side of said path so that said detector means is exposed to light when a hole is located between said light emitting portion and said detector means.

4,243,892

ENERGY-EFFICIENT FLUID MEDIUM PUMPING SYSTEM

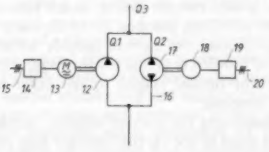
Nils-Eric Andersson, Vesteras, and Bengt Sinner, Vesteras, both of Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Sep. 7, 1979, Ser. No. 73,195

Claims priority, application Sweden, Sep. 11, 1978, 7809513

Int. Cl.³ H02P 9/04

U.S. Cl. 290—1 R 4 Claims



1. A system for pumping or compressing a fluid medium from a lower level to a higher level or from a fluid medium source at a lower pressure to a reservoir at a higher pressure which includes

means forming a fluid medium input for carrying fluid medium from a lower level fluid medium source or from a fluid medium source at a lower pressure,

means forming a fluid medium output for conveying the fluid medium to a reservoir at a higher level or at a higher pressure,

means forming at least two parallel fluid medium flowpaths between said fluid medium input means and said fluid medium output means,

means forming a pump or compressor in one of said flowpath-forming means for pumping or compressing the fluid medium from said input means to said output means, and

means operable as either a pump or a turbine in each of the remainder of said flowpath-forming means, and a means connected to each said pump or turbine means operable as either a drive motor or an electrical generator, such that when said means connected to said pump or turbine means is operated as a drive motor, the means operable as either a pump or a turbine will act as a pump and fluid medium will be pumped from said input means to said output means, whereas when fluid medium is allowed to return flow from said output means to said input means, said means operable as either a pump or a turbine will act as a turbine and said means operable as either a drive motor or an electrical generator will operate as an electrical generator and feed power to an electrical network.

4,243,893

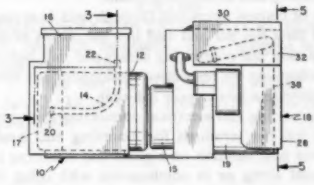
SUPPLEMENTAL COOLING SYSTEM FOR PORTABLE ELECTRIC POWER PLANTS

Nathan Sten, Chula Vista, Calif., assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Nov. 3, 1978, Ser. No. 957,644

Int. Cl.³ F01P 1/06

U.S. Cl. 290—1 B 12 Claims



1. A cooling system for power plant enclosures incorporating means for generating cooling air flow for cooling the primary components of the power plant, including an engine cooling blower in a blower housing, the invention comprising:

a diverter means for diverting a portion of the cooling air flow away from the primary components,

said diverter means comprising an opening in the blower housing,

duct means for ducting the diverted air flow to an enclosure mounted on said power plant, and into heat transfer relationship with heated elements associated with said enclosure,

discharge means for exhausting said diverted air flow from said enclosure.

4,243,894

SOLID STATE MOTOR CONTROL UNIVERSAL ASSEMBLY MEANS AND METHOD

Richard J. Kuntner, Milwaukee, and James C. Van der Meer, Brookfield, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 2, 1978, Ser. No. 947,739

Int. Cl.³ H02B 13/00; H05K 7/02

U.S. Cl. 307—147 12 Claims

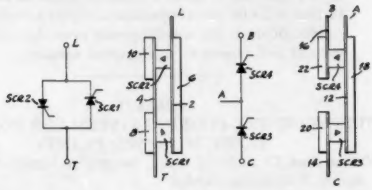
1. Solid state power pole universal assembly means comprising:

a pair of semiconductors of the type having flat opposite faces serving as power terminals separated by lateral sides adapting them for pressure mounting at said faces and being arranged in spaced apart side-by-side relation in reversed directions so that different power terminals face in the same direction;

first mounting and connecting means comprising a first long bus bar against the faces of both said semiconductors that

face in the same direction and having a terminal end extending in a first lateral direction;

second mounting and connecting means comprising a selected one of two interchangeable bus bar means including (a) bus bar means having a second long bus bar like the aforesaid first long bus bar against the faces of both said semiconductors that face in the other direction and having a like terminal end extending in the opposite lateral direction, and (b) bus bar means having two like short bus bars against the faces of respective semiconductors that face in the other direction and having like terminal ends extending in said first and said opposite lateral directions;



a long heat sink engaging said first long bus bar and heat sink means engaging the selected bus bar means of said second mounting and connecting means;

a pair of clamps extending through said heat sink and said first long bus bar and said bus bar means of said second mounting and connecting means and said heat sink means for clamping the respective semiconductors therebetween to provide a power pole sub-unit;

and supporting and electrical connecting means attached to said bus bar terminals for mounting and insulating said power pole sub-unit on a panel and affording connection thereof along or in combination with other like power pole sub-units in a power control system.

4,243,895

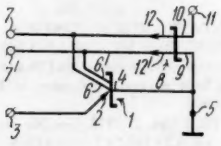
INTEGRATED INJECTION CIRCUIT

Artashes R. Nazarian, ploschad Junosti, 3, kv . 16; Vyacheslav Y. Kremlev, korpus 423, kv. 81; Vilyam N. Kokin, korpus 441, kv. 115; Viktor I. Sladkov, Berezovaya alleya, 6, kv. 77; Boris V. Venkov, korpus 206, kv. 46, all of Moscow, and Vadim V. Lavrov, ulitsa 8 Marta, 7, kv. 125, Khimki Moskovskoi oblasti, all of U.S.S.R.

Filed Jan. 4, 1978, Ser. No. 866,821

Int. Cl.³ H03K *19/017, 19/094, 19/20;* **H01L** *29/80*

U.S. Cl. 307—205 **11 Claims**



1. An integrated injection circuit comprising: a current generator connected to a supply source and to ground; a normally cutoff n-channel field-effect transistor comprising a gate connected to said current generator and comprising at least one non-injecting rectifying contact, a source connected to ground, and a drain; an input electrode of the circuit connected to said gate of said FET and to said current generator; and, an output electrode of the circuit connected to the drain of said FET.

4,243,896

I²L CIRCUIT WITH AUXILIARY TRANSISTOR

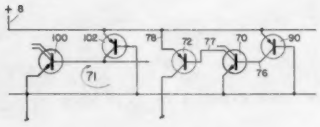
Claude Chapron, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 675,605, Apr. 9, 1976, abandoned. This application May 23, 1977, Ser. No. 799,678

Claims priority, application France, Apr. 14, 1975, 75 11504

Int. Cl.³ H03K *19/091*

U.S. Cl. 307—213 **10 Claims**



1. An integrated circuit comprising:

controlling and controlled transistors of a first conductivity type having bases and collectors;

associated biasing current injectors connected to at least some of said transistors to bias same;

said associated biasing current injectors each having at least first, second and third zones with said first and second zones forming a first rectifying junction and said second and third zones forming a second rectifying junction;

means connecting said controlling transistor collectors to said controlled transistor bases;

said transistors and associated current injectors forming plural elementary groups in which said transistors require substantially the same supply current and each with a current injector;

two terminals for connection to a current source means;

means connecting said plural groups in series across said two terminals for said current source means so as to include a first in the series defined as the highest stage, a last in the series defined as the lowest stage, higher and lower stages being defined as the higher stage being closer to the beginning of the series than a lower stage;

said series connecting means including means connecting the current injector first zone of the group of transistors in the highest stage, without the interconnection of further stages, to said current source means terminal for biasing the first rectifying junction in the forward direction;

means connecting the current injector second zone of the group of transistors in said lowest stage, without the interposition of further stages, to the other current source means terminal;

means connecting the current injector second zone of the highest stage to the current injector first zone of the next lower stage;

and means providing a signal connection between a controlling transistor collector of a higher stage and a controlled transistor base of a lower stage;

said signal connection means comprising a signal controlled current source means for actuating said control transistor to which it is connected by supplying base drive current thereto and including a transistor of a second conductivity type complementary to said controlling and controlled transistors, said control transistor base to which said signal connection is provided being free of any other current source drive capable of actuating said controlled transistor in the absence of current flow along said signal connection;

said second conductivity type complementary transistor

having emitter, base and collector, and being located in said higher stage;

means connecting said transistor emitter to the current injector first zone of said higher stage;

means connecting said transistor base to the controlling transistor collector;

means connecting said complementary transistor collector to the controlled transistor base; and

an auxiliary transistor of the same conductivity type as said controlled and said controlling transistors in a stage lower than said highest stage, connected to an associated current injector and being connected parallel to the emitter base junction of said controlled transistor, said auxiliary transistor being connected so as to be rendered conductive at least during the period in which said controlled transistor is conductive for bringing said controlled transistor more rapidly into a non-conductive state.

4,243,897

CHARGE COUPLED SEMICONDUCTOR DEVICE STORING 2-BIT INFORMATION

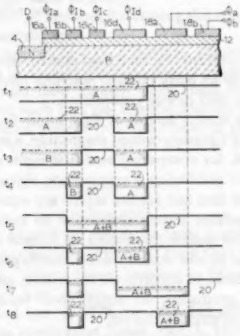
Kazuyasu Fujishima; Michihiro Yamada, and Kouichi Nagasawa, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 28, 1978, Ser. No. 901,258

Claims priority, application Japan, Apr. 28, 1977, 52/49231

Int. Cl.[3] G11C *19/28;* H01L *29/78*

U.S. Cl. 307—221 D **3 Claims**



1. A method of driving a charge coupled semiconductor device comprising a semiconductor layer of a first type conductivity including a main face, an electrically insulating film disposed on said main face of said semiconductor layer, an electrode array of a plurality of transfer electrodes disposed in a consecutive spaced relationship at predetermined intervals on said electrically insulating film for storing an electric charge thereunder and for transferring said electric charge in a predetermined direction along said main face of said semiconductor layer, charge injection means composed of an electrically conductive region of a second type conductivity disposed to form a PN junction with said semiconductor layer, said electrically conductive region being responsive to an input signal applied thereto to produce an electric charge in said semiconductor layer, an input gate unit consisting of a first, a second, a third and a fourth input gate electrode disposed on said electrically insulating film between said electrically conductive region and the transfer electrode on the input side of said electrode array, said fourth input gate electrode being disposed adjacent to said transfer electrode on said input side of said electrode array to form a predetermined spacing therebetween and having an area larger than that of said second input gate electrode, which method comprises the first step of applying gate signals to said first, second, third and fourth input gate electrodes during the time of application of a first input signal to said charge injection means for injecting a charge into said semiconductor layer through said charge injection means, the second step of removing said gate signal applied to said third input gate electrode to store a first charge corresponding to said first input signal directly under said fourth input gate electrode, the third step of applying a gate signal to said first input gate electrode during the time of application of a second input signal to said charge injection means for injecting a charge into said semiconductor layer through said charge injection means, the fourth step of removing said gate signal applied to said first input gate electrode to store a second charge corresponding to said second input signal having a different magnitude than said first change directly under said second input gate electrode, and the fifth of applying gate signals to said second, third and fourth input gate electrodes to store a third charge equal to the sum of said first and second charges directly under said second, third and fourth input gate electrodes.

4,243,898

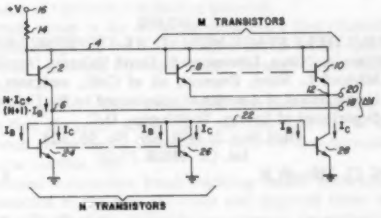
SEMICONDUCTOR TEMPERATURE SENSOR

Walter C. Seelbach, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 16, 1978, Ser. No. 961,307

Int. Cl.[3] H01L *31/00;* H03K *3/26;* G06G *7/24*

U.S. Cl. 307—310 **9 Claims**



1. A temperature sensor circuit for providing an indication of temperature comprising:

(a) first semiconductor junction means for conducting a first current therethrough and for generating a first voltage thereacross;

(b) at least second semiconductor junction means for conducting a second current therethrough and for generating a second voltage thereacross;

(c) third means coupled to said first and at least second semiconductor junction means and adapted for coupling to a power supply for providing said first and second currents;

(d) fourth means coupled to said first and at least second semiconductor junction means for maintaining said predetermined relationship; and

(e) output means coupled to said first and said at least second semiconductor junction means, respectively, for providing said first and second voltages as a differential output voltage having a magnitude which is linearally proportional to temperature;

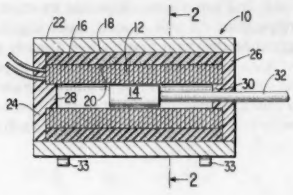
(f) said first semiconductor junction means having a predetermined junction area and said at least second semiconductor junction means having a junction area equal to M times said predetermined junction area.

4,243,899

LINEAR MOTOR WITH RING MAGNET AND NON-MAGNETIZABLE END CAPS

Wolfgang Jaffe, Roselle Park, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 8, 1979, Ser. No. 18,553
Int. Cl.[3] H02K *41/00*
U.S. Cl. 310—14 6 Claims



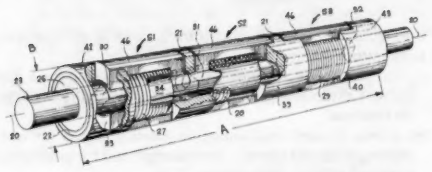
1. A linear motor comprising a casing of ferromagnetic material, a coil within said casing, a plunger which is wholly in a passageway in the coil and which is movable by the coil in opposite directions to selected positions in the passageway, a permanent magnet in the casing concentric with the coil and plunger, and having oppositely polarized magnetic poles on outer and inner surfaces, fixed end caps of non-magnetizable material which seal ends of the longitudinal passagway wherein the plunger is wholly located and provide an in-line face to face relationship between the ends of the plungers and the end caps extending from the plunger in the directions of movement thereof by the coil only to the non-magnetizable material of the end caps; and an output shaft of non-magnetizable material attached to the plunger and extending from the plunger to and through an end cap.

4,243,900

MULTIPLE STAGE MINIATURE STEPPING MOTOR

William A. Niven, Livermore; S. David Shikany, Danville, and Michael L. Shira, Fremont, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 3, 1978, Ser. No. 957,621
Int. Cl.[3] H02K *37/00*
U.S. Cl. 310—49 R 4 Claims



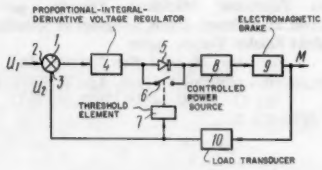
1. A miniature stepping motor composed of a plurality of selectively controlled stages arranged longitudinally along a common centrally located rotor shaft and having nonmagnetic spacer means positioned intermediate each of said plurality of stages, such that sequential activation of the stages results in successive rotor steps of about 60° to provide partial or full rotation of said rotor shaft; each of said stages consisting of an annular bobbin constructed of nonmagnetic material positioned in spaced relationship about said rotor shaft, a pair of longitudinally extending soft iron pole pieces mounted on opposite sides of said annular bobbin, each of said pole pieces having an inner cutaway section, a coil of electrically conductive material wound on said bobbin at said cut-away sections of said pole pieces, and an insert of magnetic material positioned in and exposed on opposite sides of said rotor shaft and extending along the longitudinal length of said pole pieces; said nonmagnetic spacer means being constructed to retain said pair of pole pieces of each adjacent stage on opposite sides of said bobbin of each adjacent stage; said inserts of magnetic material in said plurality of stages being located in said common rotor shaft at an angle with respect to said pole pieces and with respect to one another.

4,243,901

EDDY CURRENT MACHINE BRAKE CONTROL DEVICE

Ilya I. Vorona, Voikovsky pereulok, 26, korpus 1, kv. 16; Rikhard A. Ioganson, Kutuzovsky prospekt, 4, kv. 6; Mark B. Perchenok, ulitsa Chasovaya, 27/12, kv. 16; Evgeny V. Chegodaev, ulitsa Novgorodskaya, 34, kv. 317, and Valentin I. Chulin, ulitsa Novo-Petrovskaya, 18, kv. 49, all of Moscow, U.S.S.R.

Filed Jul. 26, 1978, Ser. No. 928,317
Claims priority, application U.S.S.R., Aug. 31, 1977, 2512801
Int. Cl.[3] H02K *49/04*
U.S. Cl. 310—94 6 Claims



1. An eddy current machine load control device for controlling the load of an eddy current machine having a controlled power source, said device comprising:

comparator means having a first input for the supply of voltage of a predetermined magnitude, a second input, and an output, for comparing said first input and said second input, and producing a comparison signal at said output when said first and second inputs are equal in magnitude;

voltage regulator means responsive to said output of said comparator means for issuing an output controlling said controlled power source, and accordingly said eddy current machine, in accordance therewith, said eddy current machine producing an actual load value indicative of mechanical stresses therein;

transducer means responsive to said actual load value of said eddy current machine for converting said mechanical stresses to an electrical signal output, and for providing said electrical signal output as said second input of said comparator means;

diode means for providing said output of said voltage regulator means to said controlled power source when said output of said voltage regulator means has a first polarity, and for blocking said output of said voltage regulator means from said controlled power source when said output of said voltage regulator means has a second polarity;

shunt means normally in an open circuit condition for blocking said output of said voltage regulator means from said controlled power source, and selectively actuable to a closed circuit condition for providing said output of said voltage regulator means to said controlled power source when said output of said voltage regulator means is of said second polarity; and

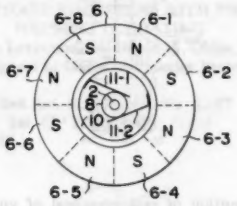
threshold means responsive to said electrical output signal of said transducer means for selectively actuating said shunt means to said closed circuit condition so long as said braking moment of said eddy current machine is greater than a minimum moment value, and for selectively actuating said shunt means to said open circuit condition when said braking moment of said eddy current machine equals said minimum moment value.

4,243,902

DIRECT CURRENT MOTOR WITH NON-SUPERPOSED ARMATURE WINDINGS

Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo; Manabu Shiraki, 4451-171 Shimotsuruma, Yamato-shi, Nerima-ku, Kanagawa-ken, and Kazuhito Egami, 2-44-1 Chuo, Nakano-ku, Tokyo, all of Japan

Filed Aug. 29, 1978, Ser. No. 937,848
Claims priority, application Japan, Dec. 22, 1977, 52-153628
Int. Cl.³ H02K *23/54*
U.S. Cl. 310—154 2 Claims



1. A direct current motor having armature windings that are non-superposed with respect to each other comprising:

a field magnet having 4 mn poles that are magnetized into alternate N and S polarities in equal angular spaces wherein m is a positive integer of 1 or more and n is a positive integer of 2 or more;

a magnetic-material member for closing the magnetic path of said field magnet; and

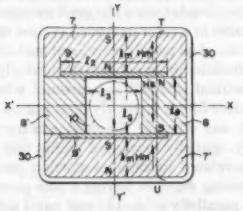
armature having m(2n+1) armature windings disposed thereon in a non-superposed manner in equal pitches with respect to said field magnet poles, said windings each being formed such that the angular spacing of those conductor portions thereof that contribute to the generation of torque is equal to the angular width of a field magnet pole.

4,243,903

PERMANENT MAGNET STATOR FOR A DC DYNAMO ELECTRIC MACHINE USING BLOCKING MAGNETS

Matsuo Mishima, Tokyo, Japan, assignor to Micro Technology Laboratory Co., Ltd., Japan

Filed Oct. 3, 1978, Ser. No. 948,208
Claims priority, application Japan, Oct. 6, 1977, 52-120240
Int. Cl.³ H02K *21/28*
U.S. Cl. 310—154 15 Claims



1. A stator for a DC dynamo electric machine comprising:

a square-shaped yoke;

a pair of main magnets oppositely disposed in said square-shaped yoke for forming a magnetic field in an air gap defined between said two magnets;

a non-magnetic or substantially non-magnetic columnar solid body rotor positioned between said two magnets for establishing an extremely large air gap between said two magnets;

plate-like pole pieces mounted on respective opposing areas of said main magnets facing said rotor for establishing a double-pole intensified magnetic field in said extremely large air gap parallel to leakage magnetic fields developed on both sides of said extremely large air gap between said main magnets; and

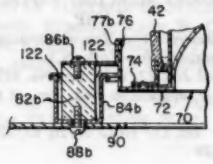
a pair of blocking magnets oppositely disposed in said yoke between said two main magnets on the sides of said extremely large air gap for generating magnetic fields reverse in direction and equal in intensity to said leakage magnetic fields developed on the sides of said extremely large air gap, wherein said blocking magnets cancel the leakage magnetic flux to provide an effective strong magnetic field in said extremely large air gap.

4,243,904

IMAGE INTENSIFIER TUBE WITH INSULATOR SHIELD

James R. Caraher, Stamford, Conn., assignor to The Machlett Laboratories, Inc., Stamford, Conn.

Filed Jun. 2, 1978, Ser. No. 911,857
Int. Cl.³ H01J *40/04, 40/02*
U.S. Cl. 313—99 9 Claims



1. An image intensifier tube comprising:

an evacuated envelope;

tubular means in the envelope for supporting therein a source of vaporous conductive material;

electrode means in the envelope including a first electrode disposed adjacent the tubular means and an axially spaced second electrode for establishing adjacent electrostatic fields;

dielectric spacer means having first portions connected to the first electrode and second portions attached to the second electrode for insulatingly securing the electrodes to one another; and

cup-shaped conductive hood shielding means electrically connected to the first electrode and disposed about the first portions of the dielectric spacer means for protecting the first portions from the vaporous conductive material and the adjacent electrostatic fields,

the cup-shaped conductive hood shielding means including closed end portions disposed in interfacing relationship with the first portions and having extended therefrom wall portions laterally spaced from the first portions and terminating in open end portions outwardly curled rims.

4,243,905

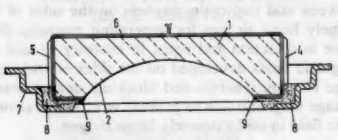
METHOD OF MAKING THE CATHODE OF A DIODE IMAGE INTENSIFIER TUBE, AND IMAGE INTENSIFIER TUBE HAVING A CATHODE MADE BY THIS METHOD

Lambertus K. van Geest, Roden, and Johannes J. Houtkamp, Delft, both of Netherlands, assignors to N.V. Optische Industrie "De Oude Delft", Netherlands

Filed Jul. 20, 1978, Ser. No. 926,252
Claims priority, application Netherlands, Jul. 27, 1977, 7708321
Int. Cl.³ H01J *43/28*
U.S. Cl. 313—102 8 Claims

1. In a method for making a cathode of a diode image intensifier tube wherein alkali metals and antimony are evaporated onto an inner surface of a cathode window and wherein said

cathode window is joined by a layer of frit to a metallic cathode flange coupled to a cathode housing, said diode image intensifier tube having an electrical resistance of a pre-determined value such that at light levels whereat there is a danger of anode burn out, said diode image intensifier tube is caused to



be defocussed or cut off, the improvement characterized by applying an alkali-resistant and insulating layer to said frit layer after joining said cathode to said cathode flange and by protecting an area extending around said cathode and said cathode flange prior to evaporating said alkali metals and antimony whereby no antimony is present.

4,243,906

HIGH PRESSURE MERCURY VAPOR DISCHARGE LAMP

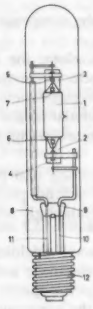
Ian L. Wilson, Hanover, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 22, 1978, Ser. No. 917,978

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725297

Int. Cl.³ H01J *61/20, 61/22*

U.S. Cl. 313—229 **7 Claims**



1. A high pressure mercury vapor discharge lamp which comprises: a discharge vessel and means for maintaining the discharge in said vessel, said discharge vessel containing mercury, at least one rare gas as a starting gas, at least one of the halogens iodine, bromine and chlorine, at least one of the metals selected from the group consisting of calcium, strontium, barium and the rare earth metals, each of said metals being wholly or partly in the form of their halides, said discharge vessel containing in addition at least one metal halide selected from the group consisting of the halides of iron, of cobalt and of nickel.

4,243,907

LAMP HAVING REDUCED WIDTH PRESS-SEAL

Clyde B. Kohl, Winchester; George B. Kendrick, and Raymond T. Fleming, both of Lexington, all of Ky., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jul. 5, 1979, Ser. No. 54,769

Int. Cl.³ H01J *5/48, 5/50*

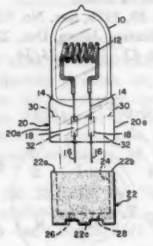
U.S. Cl. 313—318 **6 Claims**

1. A lamp comprising:

a sealed envelope of vitreous material having a press-seal at one end;

a pair of lead-in wires hermetically sealed through said press-seal in spaced-apart relationship to one another and extending beyond said press-seal;

a filament connected across the inner ends of said lead-in wires; and



at least a portion of said press-seal of vitreous material having a reduced width as provided by removing right-angled sections from opposite lower corners thereof, whereby said lamp press-seal is adapted to fit a base smaller than that conventionally matched with said envelope.

4,243,908

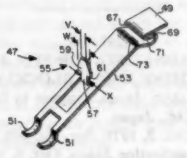
ELECTRICAL CONNECTIVE MEANS FOR A CRT MASK-PANEL ASSEMBLY

Kurt H. Brenner, Jr., Seneca Falls, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Apr. 16, 1979, Ser. No. 30,249

Int. Cl.³ H01J *29/07*

U.S. Cl. 313—407 **9 Claims**



1. An improvement in the electrical connective means effecting interconnection between the mask electrode and a discrete area of the panel in a color cathode ray tube mask-panel assembly whereof the glass panel component includes a viewing area having a cathodoluminescent screen interiorly formed thereon and a perimetrical sidewall therearound whereon an electrically conductive film is interiorly disposed on at least a portion of the panel; and whereof the mask electrode component of said assembly, spatially supported within said panel, includes a viewing area-related foraminous portion peripherally affixed to a rigid framing member having a side portion spatially and substantially parallelly related to said panel sidewall, said framing member having a contiguous ledge portion terminally instanding from said side portion, said interconnection improvement comprising: an electrical contactor formed as a longitudinal resilient conductive member having an attachment portion affixed to said framing member, an opposed contact portion and an intermediate flexural portion therebetween, said flexural portion having an integral structure bent angularly therefrom to form a tab-like projecting retention-release element extending toward said framing member; and a discretely configurated aperture formed in the side portion of said framing member, said aperture being dimensioned to receive and interact in a cooperating manner with a section of

said projecting retention-release element to effect a retract-release mechanism whereby said contactor is desirably retained in a retracted position proximal to said framing member and upon subsequent manipulation of said projecting element is released permitting flexural movement of said contactor to make positive pressured contact with an area of conductive film discretely disposed on said panel sidewall.

4,243,909

FLUORESCENT LAMP ALKALINE EARTH HALOPHOSPHATE PHOSPHOR WITH PROTECTIVE $NACS_2PRCL_6$ COATING

Charles Brecher, Lexington, and Daniel W. Oblas, Bedford, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 5, 1979, Ser. No. 1,117
Int. Cl.³ H01J *63/04, 61/63*
U.S. Cl. 313—487 **1 Claim**

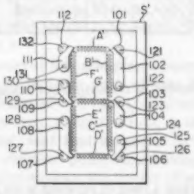
1. A fluorescent lamp comprising:
a tubular envelope;
a phosphor layer on the interior surface of said envelope, said layer consisting essentially of finely-divided phosphor particles of a cool white alkaline earth halophosphate phosphor, each particle having a thin protective coating consisting of $NaCs_2PrCl_6$ of about 10 Angstroms thickness;
said protective coating being essentially opaque to ultraviolet radiation of wavelengths less than about 250 nanometers but excited thereby to emit visible radiation;
mercury vapor within said envelope; and
a pair of electrodes spaced apart within said tubular envelope and being adapted for connection, at those portions thereof extending outside of said envelope, to means for producing an electric discharge within said tubular envelope.

4,243,910

FILAMENT SUPPORT ASSEMBLY FOR DISPLAY DEVICE

Kiyoshi Nagai, Urawa, Japan, assignor to Wakoh Corporation, Tokyo, Japan

Filed Aug. 25, 1978, Ser. No. 936,770
Int. Cl.³ H01K *1/18, 7/04*
U.S. Cl. 313—522 **8 Claims**



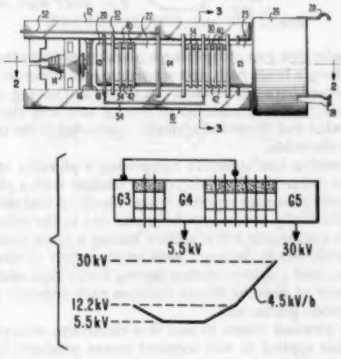
1. A filament support assembly for a filament type display device, comprising:
a plurality of first leadwires extending through the bottom of the display device;
a plurality of second leadwires extending through said bottom a greater distance than said plurality of first leadwires;
a plurality of first electrode plates each connected to a respective one of said plurality of first leadwires;
a plurality of second electrode plates each connected to a respective one of said plurality of second leadwires;
a plurality of first filaments extending in a first direction and each said first filament including end portions connected between respective ones of either said first or second electrode plates in substantially a first plane;
a plurality of second filaments extending in a second direction and each said second filament including end portions connected between respective ones of the other of said first or second electrode plates in substantially another plane parallelly spaced from said first plane; and
the points of interconnection of respective ones of said first filaments with said first or said second electrode plates and the points of interconnection of respective ones of said second filaments with the other of said first or second electrode plates being in substantially superposed relationship in a direction substantially transverse to said first and second planes.

4,243,911

RESISTIVE LENS ELECTRON GUN WITH COMPOUND LINEAR VOLTAGE PROFILE

Norman D. Winarsky, Princeton; Roger W. Cohen, Trenton; David P. Bortfeld, Kendall Park, and Leon J. Vieland, Princeton, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 28, 1979, Ser. No. 70,645
Int. Cl.³ H01J *29/96, 29/62*
U.S. Cl. 315—3 **14 Claims**



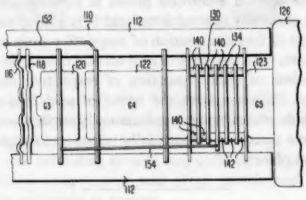
1. An electron gun comprising first, second and third lens electrodes spaced along a beam path, and a plurality of resistive lens structures, each comprising a stack of alternate electrode plates and resistive spacer blocks secured together so that each stack is electrically continuous from one end to the other,
a first one of said resistive lens structures physically disposed between said second and third lens electrodes and having one end thereof electrically connected to said second lens electrode and the other end thereof electrically connected to said third lens electrode,
a second one of said resistive lens structures electrically paralleled with a first portion of said first resistive lens structure, and
lead-in terminal means to said second and third lens electrodes whereby potentials applied to said terminal means produces bleeder currents through said resistive lens structures so that said first portion of said first resistive lens structure experiences less bleeder current than the remaining portion of said first resistive lens structure whereby to provide a compound linear potential profile along said first resistive lens.

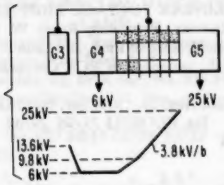
4,243,912

SIMPLIFIED RESISTIVE LENS ELECTRON GUN WITH COMPOUND LINEAR VOLTAGE PROFILE

David P. Bortfeld, Kendall Park, and Leon J. Vieland, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 28, 1979, Ser. No. 70,538
Int. Cl.³ H01J *29/96, 29/62*
U.S. Cl. 315—3 **5 Claims**





1. An electron gun comprising a plurality of lens electrodes spaced along a beam path, and a resistive lens structure physically disposed between said lens electrodes and having one end thereof electrically connected to one of said lens electrodes and the other end thereof electrically connected to the other of said lens electrode,

said resistive lens structure comprising a plurality of apertured electrode plates alternately stacked with a plurality of equal resistance resistive spacer blocks so that said stack is electrically continuous from one end to the other, said stack comprising a first section having a given number of resistive blocks between each adjacent pair of electrode plates, and a second section having fewer than said given number of resistive blocks between each adjacent pair of electrode plates, and

lead-in terminal means to said lens electrodes whereby potentials applied to said terminal means produces bleeder currents through said resistive lens structure so that the axial potential gradient established in said first section of said resistive lens structure is less than the axial potential gradient established in said second section, whereby to provide a compound linear potential profile along said resistive lens.

4,243,913

COLOR PICTURE TUBE MAGNETIC SHIELDING AND DEGAUSSING STRUCTURE

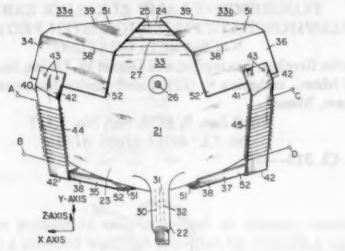
Leroy W. Nero, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1979, Ser. No. 70,904
Int. Cl.³ H01J *29/06*
U.S. Cl. 315—8 **13 Claims**

9. A magnetic shielding and degaussing structure for a color picture tube having a shadow mask and faceplate, funnel and neck regions, comprising:

a magnetizable shielding plate located at each corner of said color picture tube, entirely external to said color picture tube, for collecting stray magnetic flux, each shielding plate extending over a respective region of said shadow mask and over a funnel region adjacent thereto that are unshielded by other magnetizable structures within said color picture tube;

a pair of vertically oriented magnetizable collimator strips, each connecting upper and lower corner shielding plates on a side of said color picture tube to provide a low reluctance path substantially in a magnetizable material between an upper and a lower corner shielding plate, said upper and lower corner shielding plates guiding said stray



magnetic flux into said collimator strips away from the interior of said color picture tube to provide magnetic shielding for said color picture tube; and

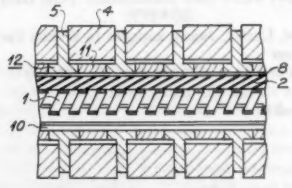
a pair of degaussing windings with conductor turns of said windings wound around the vertical axes of said collimator strips, said shielding plates cooperating with said collimator strips to form a low reluctance path for directing degaussing flux generated by said degaussing windings into said shadow mask.

4,243,914

CIRCULATING FLUID COOLED DELAY LINE FOR HIGH FREQUENCY TUBES, AND HIGH FREQUENCY TUBES HAVING SUCH A DELAY LINE

Bernard Delory; Georges Fleury, and Jean-Claude Kuntzmann, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 20, 1979, Ser. No. 22,302
Claims priority, application France, Mar. 24, 1978, 78 08673
Int. Cl.³ H01J *25/34*
U.S. Cl. 315—3.5 **8 Claims**



1. A delay line having a cooling duct comprising

a delay line;

supports;

a first sleeve;

a second sleeve;

said supports having a face in contact with the outer surface of said delay line and another face in contact with an inner surface of said first sleeve;

said first sleeve being vacuum tight on its inside and impervious to a cooling fluid on its outside;

said second sleeve surrounding said first sleeve, and spaced therefrom to provide at least one duct between the two sleeves;

said supports of dialectric material being equally spaced about said line and parallel to said lines axis;

said first sleeve being of non magnetic material and coaxial with said delay line, and being in contact with said supports and linking to adjacent supports in a straight line or plane; and

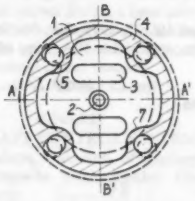
said second sleeve being circular in cross section, and impervious to a cooling fluid, and being in contact with said first sleeve in front of said supports.

4,243,915

DELAY LINE COMPRISING COUPLED CAVITIES AND COOLED BY FLUID-CIRCULATION

Georges Fleury, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 25, 1979, Ser. No. 33,056
Claims priority, application France, May 2, 1978, 78 12903
Int. Cl.³ H01J *25/34*
U.S. Cl. 315—3.5 **3 Claims**



1. A delay line comprising coupled cavities and cooled by fluid-circulation, said cavities being substantially defined by discs (**1**) and walls (**4**), which consists of:

said discs (**1**) being aligned parallel to one and the same axis (O—O') constituting the axis of the line, these discs (**1**) forming the wall common to two adjacent cavities and comprising a central aperture (**2**) for the electron beam, focussed on the axis of the line, to pass through, and having at least one inter-cavity coupling aperture (**3**);

said walls (**4**) longitudinally bounding the cavities, the external shape of a transverse section of these walls being circular, these walls being traversed by ducts (**5**) in which a cooling fluid circulates; and the direct distance from the axis (O—O') to the internal side of said walls being shorter in those regions of the walls having ducts, than to those regions not having the ducts.

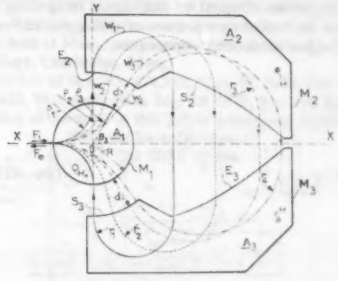
4,243,916

MAGNETIC MIRROR FOR BEAMS OF CHARGED PARTICLES ACCELERATED IN AN ACCELERATOR

Hubert Leboutet, and Dominique Tronc, both of Buc, France, assignors to C.G.R.MeV, Buc, France

Filed Apr. 17, 1979, Ser. No. 30,937
Claims priority, application France, Apr. 21, 1978, 78 11856
Int. Cl.³ H01T *7/24*; H05B *31/26*
U.S. Cl. 315—111.8 **11 Claims**

1. A magnetic mirror for reflecting a beam of charged particles along its mean incident path of axis XX, said magnetic mirror which is designed to be associated with a linear particle accelerator comprising at least a first, a second and a third magnetic deflector, said first magnetic deflector being provided with two circular polepieces having a radius R and delimiting a circular air-gap, the center of which is located on said axis XX, a magnetic field H_1 of predetermined value being created within said circular air-gap; said second and third magnetic deflector being provided respectively with a pair of polepieces, the pair of polepieces of said second magnetic deflector and the pair of polepieces of said third magnetic deflector being identical and delimiting two air-gaps in which is created a magnetic field H having a direction opposite to that of magnetic field H_1, said pair of polepieces of said second magnetic deflector being arranged symmetrically on either side of said axis XX; said air-gaps of the polepieces of said second and third magnetic deflectors presenting respectively to the beam an entry face and an exit face, said entry face of said second magnetic deflector and said exit face of said third magnetic deflector being arranged about said circular air-gap



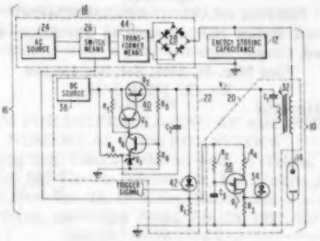
of said first deflector, said exit face of said second magnetic deflector being defined in such a way that the different paths of the particles, the lengths of which depend on the momentum of said particles, emerge from said exit face of said second magnetic deflector normal to said axis XX.

4,243,917

FLASH LAMP DRIVE CIRCUIT

Fausto Caprari, East Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,558
Int. Cl.³ H05B *41/34*
U.S. Cl. 315—241 R **6 Claims**



1. In a flash lamp drive circuit of the type wherein energy is stored by a capacitance and is supplied to the lamp when an ionization pulse is applied thereto, the improvement comprising:

control means for charging the capacitance to a threshold energy level in response to a trigger signal, and for applying the ionization pulse to the lamp to discharge the capacitance therethrough in response to and at some predetermined time after receiving said trigger signal, said control means so responding to each of said trigger signals applied thereto.

4,243,918

SIGNAL INTEGRATOR WITH TIME CONSTANT CONTROLLED BY DIFFERENTIATING FEEDBACK

William H. Meise, Wrightstown, Pa., assignor to RCA Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 43,084
Int. Cl.³ H01J *29/72*
U.S. Cl. 315—389 **12 Claims**

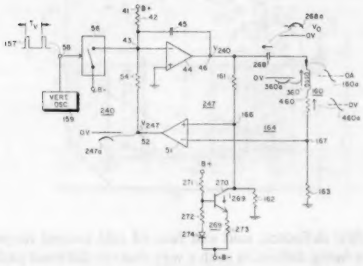
1. A signal integrating circuit, comprising:

a source of signal current;

a signal integrating capacitance;

integrating means coupled to said source and to said signal integrating capacitance for generating at an output terminal a voltage which consists essentially of a voltage representative of the time-integration of said signal current;

shunting means coupled to said signal integrating capacitance for bypassing a portion of said signal current from said signal integrating capacitance;



differentiating means coupled to said output terminal for developing a differentiated output signal; and

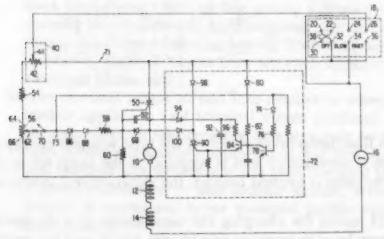
feedback means coupled to said differentiating means and to said shunting means for applying said differentiated output signal to said shunting means in a degenerative manner for increasing the effective time constant associated with said signal integrating capacitance relative to the time constant associated therewith in the absence of said feedback means.

4,243,919

MOTOR BRAKING ARRANGEMENT

Jack Brown, Union, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Mar. 31, 1980, Ser. No. 136,004
Int. Cl.³ H02P *3/14*
U.S. Cl. 318—269 **5 Claims**



1. In combination with a motor control system for operating a motor at preselected speeds, said motor having serially connected armature and field windings, and including means for connecting said system to a cyclically varying power supply, a phase control circuit connected between said motor and said power supply, and a firing circuit coupled to said phase control circuit for phase firing said phase control circuit to supply power to said motor during a portion of the cycle of said power supply, said firing circuit including operator actuable speed control means for providing a speed control signal indicative of an operator desired speed for said motor, said speed control signal varying in phase with said power supply and at a level corresponding to said desired speed, said phase control circuit requiring at least a minimum level of said speed control signal in order to supply power to said motor,

wherein the improvement comprises an arrangement for electrically braking the motor comprising:

a controllable switch connected across the armature winding of the motor and between the field windings and said power supply; and

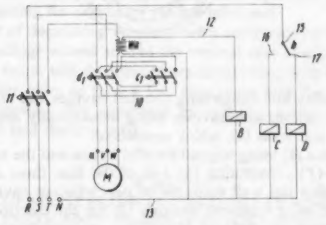
timing means enabled when the motor is run and thereafter responsive to said speed control signal being below said minimum level for closing said controllable switch for a predetermined time, whereby said controllable switch simultaneously short circuits said armature winding and provides a path between said field windings and said power supply.

4,243,920

CONTROL DEVICE FOR MONITORING MACHINES DRIVING REVOLVING DEVICES AND METHOD FOR OPERATING THE DEVICE

Emil Brehm, Am Nussbaum 16, 6710 Frankenthal 5, Fed. Rep. of Germany

Filed Jul. 27, 1978, Ser. No. 928,531
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1977, 2742216
Int. Cl.³ H02P *1/40*
U.S. Cl. 318—285 **7 Claims**



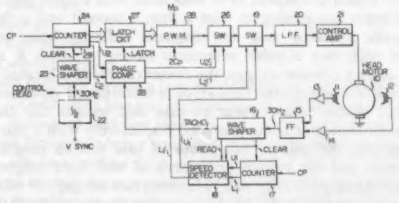
1. Method of operating a control device in a waste crushing machine, which comprises switching a drive motor from forward to reverse rotation by actuating a second overcurrent relay of a pair of overcurrent relays connected in series in a supervisory circuit coupled to the load circuit of the motor, after pausing to disconnect the motor from its source when a given first current value is reached, and switching the drive motor to forward rotation after a predetermined duration of reverse rotation and again pausing to disconnect.

4,243,921

DIGITAL SERVO SYSTEM FOR ROTATING MEMBER

Masaaki Tamura, Fujisawa, and Shigeo Tanaka, Kawasaki, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 15, 1978, Ser. No. 933,911
Claims priority, application Japan, Aug. 22, 1977, 52-100315
Int. Cl.³ A02P *5/16*
U.S. Cl. 318—314 **10 Claims**



1. A digital servo control system for a rotating member in which the phase difference between a reference signal having

a predetermined period and a rotation phase information signal related to the rotating member is detected and utilized to control the rotation of the rotating member, said system comprising:

a counter for counting clock signals and arranged to be cleared at the period of said reference signal;

a latch circuit responsive to a latch signal for latching an instantaneous count determined by said counter;

pulse width modulation circuit means for producing an output pulse signal having a pulse width which is a function of the count information latched by said latch circuit;

driving means having an input coupled to an output of said pulse width modulation circuit means for controlling the rotation of said rotating member in accordance with the pulse width of output pulse signal of said pulse width modulation circuit means; and

digital phase comparing means responsive to outputs of said counter and said rotation phase information signal for producing said latch signal only when said rotation phase information signal occurs during a time interval between a time at which said counter counts a first predetermined count number and a time at which said counter counts a second predetermined count number.

4,243,922

AIRCRAFT CONTROL SYSTEM

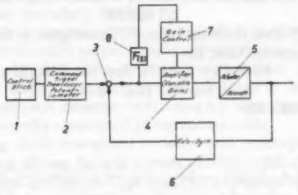
Werner Sobotta, Brinkum, Fed. Rep. of Germany, assignor to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Fed. Rep. of Germany

Continuation of Ser. No. 314,764, Dec. 13, 1972, abandoned. This application Aug. 28, 1978, Ser. No. 937,513

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1971, 2165894

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—561 **3 Claims**



1. Apparatus for controlling and stabilizing an aircraft using a controller which is responsive to signals introduced into the controller as command signals, the controller including feedback means which are responsive to reaction of the aircraft to any changes by and of an actuator means, the feedback means providing a particular signal representative as such reaction, the controller including means for comparing the command signal as provided in any instant with the particular signal then provided, for forming an error signal, the controller includes additionally amplifier means for amplifying the error signal, the output of the amplifier means operating the actuator means in the craft in response to comparison of the command signals with the reaction-responsive signals, the improvement comprising:

an adjusting and control circuit connected to be additionally responsive to the instanteous, un-integrated error signal as formed and applied to the amplifier means for amplification but not yet modified by the amplifier means, for changing parameters in the controller, said adjusting and control circuit being connected to said amplifier means for consistently increasing or decreasing the gain of amplification of the amplifier means non-linearly with the error signal as formed, so that the gain is consistently low for zero and small error signals as formed and applied to the amplifier means for amplification and relatively high for relatively large instantaneous error signals as formed and so applied, so that the gain varies with the instantaneous error signal as formed and applied to the amplifier means for amplification accordingly.

4,243,923

SERVO-CONTROLLED MOBILITY DEVICE

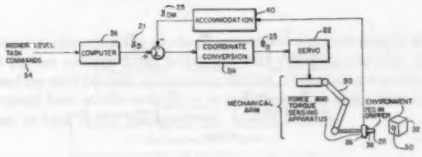
Daniel E. Whitney, Arlington, and James L. Nevins, Jr., Burlington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 474,342, May 29, 1974, Pat. No. 4,156,835. This application Jan. 22, 1979, Ser. No. 5,483

The portion of the term of this patent subsequent to May 29, 1996, has been disclaimed.

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—561 **12 Claims**



1. Motion controlling apparatus comprising a first element controllable in at least two dimensions,

a servo loop including said controllable element which directs motions of said controllable element in an environment, said servo loop comprising

means for sensing interactions between said controllable element and said environment to provide sensory information, and

task-related transfer function means for utilizing said sensory information to control the trajectory of said controllable element, whereby said controllable element produces motion, force and torque appropriate to the accomplishment of a predetermined task.

4,243,924

SYSTEM FOR INTERPOLATING AN ARC FOR A NUMERICAL CONTROL SYSTEM

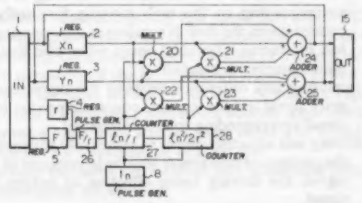
Fumio Onoda, and Yutaka Kakizoe, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1978, Ser. No. 916,225

Claims priority, application Japan, Jun. 28, 1977, 52/76065

Int. Cl.³ G05B *19/25*

U.S. Cl. 318—573 **1 Claim**



1. In a numerical control machine for generating a curve a system for controlling a variable speed motor having a starting position and a finish position with a predetermined time period between the initial and finish positions which comprises

(a) means for generating said predetermined time period;

(b) means for providing a signal corresponding to the initial speed and position of said variable speed motor;

(c) means coupled to said generating means and said signal providing means for determining the values of the coordinates of the final position at the end of said time period;

(d) means for varying the speed of said variable speed motor

whereby at the end of said time period said motor reaches said final position, and

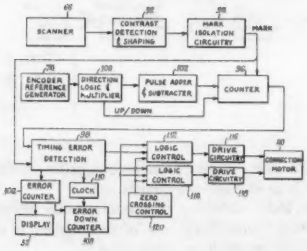
(e) means for feeding back said coordinate values of said final position to said signal providing means whereby said coordinate values become the coordinate values of the next initial position.

4,243,925

REGISTER CONTROL SYSTEM FOR WEB OPERATING APPARATUS

Herman C. Gnuechtel, Chicago, Ill., assignor to Web Printing Controls Co., Inc., Bensenville, Ill.

Filed Sep. 27, 1978, Ser. No. 946,380
Int. Cl.³ G05B 19/29
U.S. Cl. 318—603 **20 Claims**



1. A method of acquiring and maintaining a register condition for successive repeat lengths of a web that is acted on by work applying means of a web operating apparatus which also has adjusting means that can advance or retard the position of said repeat lengths relative to said work applying means, comprising the steps of:

scanning the web and producing a mark signal that corresponds to the occurrence of a distinctive contrast change on each repeat length of the web;

producing pulses during rotation in either direction of a shaft that is operatively connected to said work applying means, including producing a first predetermined number of pulses for each revolution of the shaft in a single direction;

producing a direction signal indicating the direction of rotation of the shaft;

employing a counting means for maintaining a running count of the net number of pulses that are produced wherein the count increases when the shaft is rotating in a direction corresponding to the web moving forwardly and decreases when the shaft is rotating in the opposite direction and producing a terminal count when said first predetermined number is reached;

measuring any difference between the occurrences of the mark signal and the terminal count and producing an error signal corresponding to the difference;

driving said adjusting means to selectively advance or retard the position of said repeat lengths in response to said error signal, the driving being effective to reduce the error signal.

4,243,926

LOAD RESPONSIVE VOLTAGE CONTROLLED MOTOR

Charles A. Phillips, Rte. 1, Box 54-B, Ardmore, Tenn. 38449

Continuation-in-part of Ser. No. 906,688, May 16, 1978. This application Aug. 10, 1978, Ser. No. 932,672
Int. Cl.³ H02P 5/40
U.S. Cl. 318—798 **5 Claims**

1. A motor control circuit comprising:

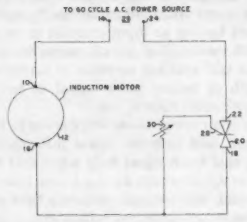
an alternating current induction motor having at least one winding connected to first and second terminals;

a triac having first (MT1) and second (MT2) power terminals and a gate terminal;

a source of alternating current voltage having first and second terminals; and

a non-capacitive impedance having first and second terminals;

wherein said first terminals of said triac, motor, and impedance are connected together, said second terminal of said



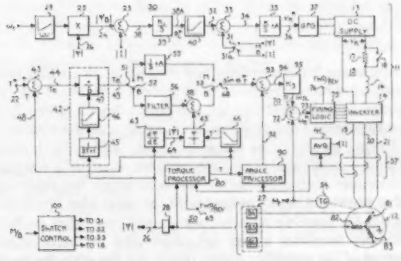
impedance is connected to said gate terminal of said triac, said second terminal of said motor is connected to said first terminal of said source of A.C. power, and said second terminal of said triac is connected to said second terminal of said source of A.C. power, the firing point of said triac being controllable by current flow through the motor and then through said impedance and gate of said triac without the necessity of other, reactive, circuitry coupled to the gate of said triac.

4,243,927

GAIN NORMALIZATION TECHNIQUE FOR CONTROLLED CURRENT INDUCTION MOTOR SYSTEM

John D. D'Atre, Ballston Lake, N.Y., assignor to General Electric Company, Erie, Pa.

Filed Oct. 2, 1978, Ser. No. 948,192
Int. Cl.³ H02P 5/40
U.S. Cl. 318—803 **5 Claims**



1. In an a-c electric motor control system including a source of excitation comprising electric power conversion apparatus that supplies a-c power of variable frequency and magnitude via electric conductors to a stator of a motor in order to effect movement of a rotor of the motor relative to the stator due to interaction of current and flux in the motor when excited, said control system being a feedback control system having a primary input terminal for receiving a command signal representative of a desired torque to be developed by the motor and having a plurality of feedback signal input terminals with each of said feedback signal input terminals being connected for receiving selected ones of a plurality of feedback signals developed by monitoring means operatively connected to the motor for generating said feedback signals representative of motor torque, motor flux, stator current and rotor angular velocity,

said control system being responsive to said feedback signals and to said torque command signal for adjusting the magnitude and frequency of the a-c power supplied to the motor whereby the magnitude of the torque developed by the motor approximates said desired toque, the improvement comprising means for varying the gain of said control system as an inverse function of the magnitude of said flux developed in the motor, said control system gain representing the amount of frequency change of said a-c power per unit of difference between said torque command signal and said motor torque feedback signal.

4,243,928

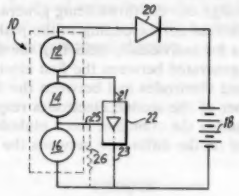
VOLTAGE REGULATOR FOR VARIANT LIGHT INTENSITY PHOTOVOLTAIC RECHARGING OF SECONDARY BATTERIES

Kenneth Nazimek, Flemington, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed May 29, 1979, Ser. No. 42,790

Int. Cl.³ H02J 7/00

U.S. Cl. 320—2 **9 Claims**



1. A photovoltaic recharging system for voltage regulated charging of secondary batteries under substantially varying light illumination levels, said system comprising:

at least one secondary battery;

a recharger array comprising a plurality of photovoltaic cells connected in power supplying relation to said battery and interconnected in a manner providing at least four serially spaced voltage terminals defining at least three subarrays each subarray containing a predetermined number of serially connected photovoltaic cells;

a blocking diode interposed between said recharger array;

a switching device having a main current conduction path coupled in parallel with at least two of said subarrays and having at least one subarray coupled between a control terminal of said switching device which is connected to one of said voltage terminals and the main current conduction path of said switching device, said switching device being responsive to a photovoltage developed across said subarray whereupon attaining a predetermined voltage said switching device is rendered conductive, electrically disabling a voltage contribution to battery recharging by the subarrays coupled in parallel with said switching device.

4,243,929

RECHARGING ACCUMULATOR BATTERIES

Tibor Lénárt, Älvsjö, Sweden, assignor to Aktiebolaget Multilab, Sweden

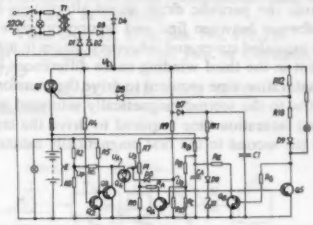
Filed Jan. 17, 1978, Ser. No. 870,072

Claims priority, application Sweden, Jan. 19, 1977, 7700535; Jun. 8, 1977, 7712063

Int. Cl.³ H02J 7/04

U.S. Cl. 320—23 **10 Claims**

1. A battery charging circuit for recharging an accumulator battery with charging current comprising: a power supply for supplying power to the batttery to charge same, said supply being operable at two voltage levels; a current monitoring device for monitoring the charging current drawn by the battery; and a regulation circuit for receiving information from the current monitoring device and responding thereto to change the mode of operation of the power supply from the higher to the lower of said voltage levels when said charging current at said higher voltage level falls below a predetermined high current value, characterized by means in the regulation



circuit for changing the mode of operation of power supply to said higher voltage level whenever said charging current, as sensed by said current monitoring device, rises above a predetermined low value, which is lower than said high current value, at said lower voltage level.

4,243,930

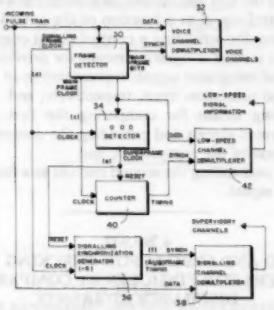
METHOD AND MEANS FOR TRANSMITTING LOW SPEED SIGNALS OVER A PCM FRAMING CODE

Calvin H. DeCoursey, Reno, Nev., assignor to Lynch Communication Systems, Inc., Reno, Nev.

Filed May 23, 1979, Ser. No. 41,865

Int. Cl.³ H04J 1/14

U.S. Cl. 370—110 **6 Claims**



1. The method of superimposing low-speed data onto a PCM carrier framing pattern of the D3 type, comprising the steps of:

(a) substituting, for a superframe consisting of n consecutive aaabbb sequences of the D3 signalling frame bit pattern, a pattern of the form aaabxx . . . bxxbxb, in which a represents a first logic level; b represents another logic level; x represents a logic level which can be either a or b; and . . . represents n-2 sequences of bxxbxx; and

(b) separately encoding the x bits of said substituted pattern with low-speed information.

4,243,931

CURRENT ISOLATOR

Moises A. dela Cruz, Cottage Grove, Minn., assignor to Rosemount Inc., Minneapolis, Minn.

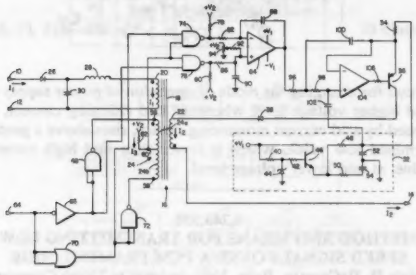
Filed Mar. 28, 1979, Ser. No. 24,868

Int. Cl.³ H01F 40/14

U.S. Cl. 323—302 **11 Claims**

1. A current isolator for electrically isolating a first current and a second current having a predetermined relationship, the current isolator comprising:

a transformer having a core and first, second, and third windings, the first winding having the first current flowing therethrough, the second winding having the second current flowing therethrough, and the third winding being connected to receive a periodic drive signal; wherein the periodic drive signal alternately drives the transformer between first and second opposite magnetically saturated states; and wherein changes in magnetizing current in the third winding cause differences between a first saturation time required to drive the transformer from the first to the second magnetically saturated state and a second saturation time required to drive the transformer from the second to the first magnetically saturated state;



means for providing a control signal as a function of changes in magnetizing current in the third winding resulting from changes in the first and second currents; wherein the means for providing a control signal senses differences between the first and second saturation times and provides the control signal as a function of the sensed differences; the means for providing a control signal comprising:

first and second integrating means for providing first and second integrated signals representative of the first and second saturation times, respectively; and

comparing means for comparing the first and second integrated signals and providing the control signal as a function of the comparison; and

means for controlling the second current as a function of the control signal.

4,243,932

METHOD AND SYSTEM FOR CHECKING SEALED CONTAINERS FOR PINHOLES BY COMPARING TWO DISCHARGE CURRENTS

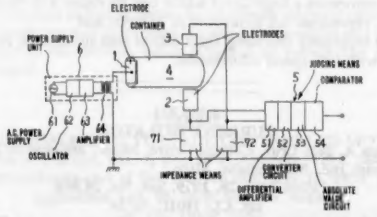
Michio Kakumoto, Naruto; Eizi Oe, Tokushima, and Hirosi Nakagawa, Naruto, all of Japan, assignors to Otsuka Pharmaceutical Factory Inc., Japan

Filed Mar. 27, 1978, Ser. No. 890,686

Claims priority, application Japan, Nov. 30, 1977, 52/144308

Int. Cl.³ G01R *31/12;* **G01M** *3/40*

U.S. Cl. 324—54 **6 Claims**



2. A system for checking sealed containers of electrical insulating material for pinholes with conductive contents so enclosed therein as to permit no grounding, said system comprising:

a first electrode having at least one electrode element and two second electrodes each including at least one electrode element;

first impedance means connected at its one terminal to one of the second electrodes;

second impedance means connected at its one terminal to the other second electrodes;

an AC power supply unit connected to the first electrode and to the other terminals of the first and second impedance means, the first and second impedance means and AC power supply unit being all adapted so that when a sealed container is placed between the first electrode and the two second electrodes, discharge current flows are generated between the first electrode and one of the second electrodes and between the first electrode and the other of the second electrodes respectively, and wherein, with a container free of any pinhole, the two discharge current flows being generated as corona discharge currents, and wherein, with a container having a pinhole, one of the discharge current flows being generated as a spark discharge current corresponding to the pinhole; and

judging means for individually detecting the discharge current flows generated between the first electrode and one of the second electrodes and between the first electrode and the other of the second electrodes respectively, and judging whether the container has a pinhole or pinholes, or not based on the difference between the detected values.

4,243,933

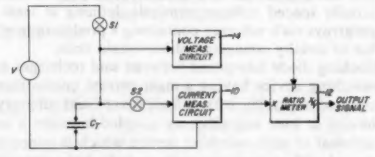
CAPACITANCE MEASUREMENT APPARATUS

Charles D. Rollman, Concord, Mass., assignor to Analogic Corporation, Wakefield, Mass.

Filed Sep. 20, 1978, Ser. No. 944,160

Int. Cl.³ G01R *27/26*

U.S. Cl. 324—60 CD **23 Claims**



1. Capacitance measuring apparatus comprising:

means for connection of a capacitor to be measured;

means for charging said capacitor to any first voltage level and for discharging said capacitor to any second voltage level;

means for providing a first signal representative of the difference between said first and second voltage levels;

means for providing a second signal representative of the average current from said capacitor during the discharge thereof;

means for obtaining the ratio of said second signal to said first signal and providing an output signal which is representative of the capacitance of said capacitor.

4,243,934

COMPOSITE SIGNAL GENERATOR

Robert G. Brasfield, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 1, 1979, Ser. No. 8,312

Int. Cl.³ G01R *31/02*

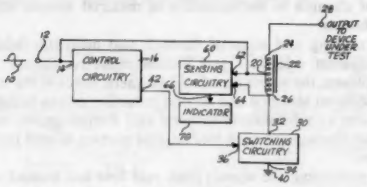
U.S. Cl. 324—72 **6 Claims**

1. A composite signal generator comprising:

means for providing a periodic waveform;

transformer means having first and second end taps and a central tap, said taps being in a predetermined electromagnetic circuit configuration;

means for coupling the periodic waveform to said transformer central tap; and



control means for sensing the periodic waveform and, in response to a predetermined condition thereof, coupling the transformer second end tap to a reference potentional such that the signal appearing at the transformer first end tap is the periodic waveform with a predetermined transient signal superimposed thereon.

4,243,935

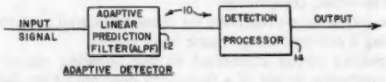
ADAPTIVE DETECTOR

John M. McCool, El Cajon; Bernard Widrow, Stanford; Robert H. Hearn; James R. Zeidler, both of San Diego, all of Calif.; Douglas M. Chabries, Provo, Utah, and Randall H. Moore, San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 18, 1979, Ser. No. 40,251

Int. Cl.³ G01R *23/16*

U.S. Cl. 324—77 R **4 Claims**



1. An adaptive detector comprising:

an adaptive linear prediction filter (ALPF), which comprises;

an input delay line, adapted to receive an input signal x(k) and delay it by a time Δ;

an L-point, that is, L-tap, adaptive filter, having an input connected to the output of the input delay line, at the output of which appears a signal r(k);

a means for summing, having two inputs, one for receiving the signal x(k) and the other for receiving an inverted signal from the adaptive filter, the output of the summing means being an error signal ϵ(k);

feedback means, whose input is connected to the output of the summing means, for taking a portion, 2μ, of the output signal ϵ(k) and feeding it back to the adaptive filter, thereby modifying the tap weights:

the adaptive detector further comprising a detection processor which comprises:

means, whose input is connected to the output of the adaptive filter, to receive the signal r(k), for performing a K-point discrete Fourier transform (DFT) on r(k); and

means, whose input is connected to the output of the DFT means, for performing a spectral analysis on the output signal of the DFT means.

4,243,936

METHOD FOR MAGNETO-OPTICAL CURRENT MEASUREMENTS

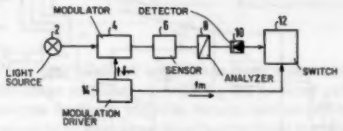
Alfred Papp, and Hauke Harms, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 18, 1978, Ser. No. 970,218

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758723

Int. Cl.² G01R *31/02, 33/02*

U.S. Cl. 324—96 **2 Claims**



1. In a method for the magneto-optical measurement of currents which includes the step of rotating the plane of polarization of a linearly polarized light beam in dependence on the current to be measured, there being a modulation signal superimposed on the measurement signal, the improvement comprising the steps of:

switching the light beam in alternation, by polarization modulation at the frequency of the modulation signal, to each of two orthogonal directions of polarization,

detecting, and the intensity signal associated with each direction of polarization and sequentially directing the resulting signals into separate electronic channels at the frequency of the modulation signal, and

combining the separate electronic signals to eliminate the noise component of the measurement signal.

4,243,937

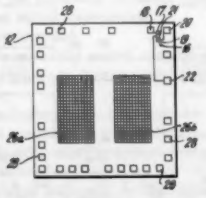
MICROELECTRONIC DEVICE AND METHOD FOR TESTING SAME

Jagir S. Multani, and Jagtar S. Sandhu, both of Dix Hills, N.Y., assignors to General Instrument Corporation, New York, N.Y.

Filed Apr. 6, 1979, Ser. No. 27,842

Int. Cl.³ G01R *31/22*

U.S. Cl. 324—158 T **10 Claims**

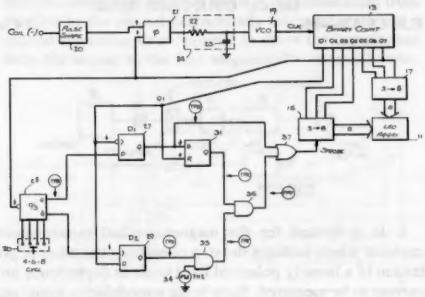


9. In combination with a microelectronic circuit of the type having a plurality of circuit elements the improvement which comprises means for appraising a first characteristic of said circuit elements while the circuit elements are simultaneously being tested to determine a second characteristic.

4,243,938
DIGITAL BAR GRAPH TACHOMETER

Andrew W. Bliven, II, and Peter J. Kindlmann, both of Northford, Conn., assignors to The Echlin Manufacturing Company, Branford, Conn.

Filed Oct. 16, 1978, Ser. No. 951,465
Int. Cl.³ G01P 3/48
U.S. Cl. 324—169 **34 Claims**

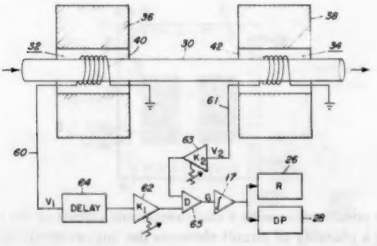


1. A digital tachometer comprising:
(a) a row of a plurality of closely adjacent light emitting diodes each representing, in order, an equal increment of speed;
(b) means to sense the rotational speed of rotating apparatus and develop a first signal representative thereof;
(c) means to convert said first signal into a plurality of signals of a maximum number equal to the number of said plurality of diodes, each associated with a diode and thus a speed increment such that a signal is present for each diode representing a speed equal to, or less than the sensed rotational speed;
(d) means coupling said plurality of signals to their associated diodes; and
(e) means to cause the next adjacent diode to the last one for which a signal is generated to blink when the sensed speed exceeds the value associated with said last one by at least one half the increment between diodes.

4,243,939
DETERMINING PARAMAGNETIC ADDITIVE CONTENT OF A BASE PARAMAGNETIC MATERIAL CONTAINING FERROMAGNETIC IMPURITY

Leonard N. Grossman, Wrightsville Beach, N.C.; Alan M. Portis, Berkeley; Henry Bernatowicz, Menlo Park, both of Calif., and Frederick C. Schoenig, Jr., Wilmington, N.C., assignors to General Electric Company, San Jose, Calif.

Filed Aug. 7, 1978, Ser. No. 931,670
Int. Cl.² G01R 33/16
U.S. Cl. 324—201 **33 Claims**

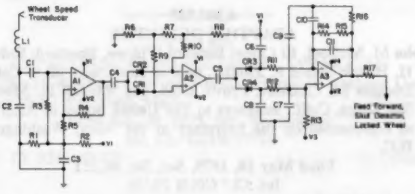


1. A method of detecting a paramangetic additive in a base paramagnetic material having an appreciably different susceptibility and containing ferromagnetic impurities comprising the steps of:
(a) establishing first and second direct current magnetic fields of different strengths;
(b) disposing in each magnetic field respective first and second inductive means for producing signals indicative of changes in susceptibility of material moved adjacent thereto;
(c) moving said material through said magnetic fields and adjacent said first and second inductive means in sequence, the strengths of said magnetic fields in the regions adjacent said first and second inductive means being sufficient to substantially saturate said ferromagnetic impurities throughout each incremental portion of said material; and
(d) processing the signals from said first and second inductive means to provide signals representative of the differential susceptibility changes of said material in the two magnetic fields.

4,243,940
AC TO DC CONVERTER FOR ANTISKID SYSTEMS

Edgar J. Ruof, Akron, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

Filed Dec. 7, 1978, Ser. No. 967,193
Int. Cl.³ H03K 9/06; H03L 7/00
U.S. Cl. 328—140 **11 Claims**



1. In an antiskid system having a wheel speed transducer producing a sinusoidal signal, the improvement of an AC to DC converter, comprising:
a squaring circuit receiving the sinusoidal signal and producing a corresponding square wave output;
a pulsing circuit connected to said squaring circuit and producing pulses of a frequency determined by the frequency of said square wave output;
an integrator having first and second inputs, each connected to said pulsing circuit through a uniquely associated resistor and capacitor, said integrator converting said pulses to a DC output having an amplitude corresponding to the frequency of said pulses, said integrator tending to create a phase lag between variations in amplitude of said DC output signal and changes in frequency of the sinusoidal signal; and
a capacitor connected in a positive feedback loop across said integrator for compensating for said phase lag.

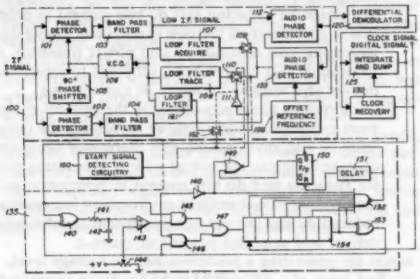
4,243,941
DIGITAL SIGNAL RECEIVER HAVING A DUAL BANDWIDTH TRACKING LOOP

Kenneth J. Zdunek, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 7, 1978, Ser. No. 967,183
Int. Cl.³ H03D 3/18; H03L 7/10
U.S. Cl. 329—50 **11 Claims**

11. In a receiver for a digital signal modulated on a carrier signal, the digital signal transmitted in a serial bit stream at a predetermined bit frequency by a clock signal, the digital signal including at least one predetermined start signal followed by a message signal, the start signal having a predeter-

mined number of bits organized in a predetermined bit pattern, said receiver including tracking phase-locked loop means for recovering the digital signal from the carrier signal, and digital demodulating means for demodulating the digital signal and recovering the clock signal from the demodulated digital signal, a method for controlling the bandwidth of the tracking loop means, said method comprising the steps of:



detecting at least a minimum number of bits of the start signal and providing an indication signal when the minimum number of bits have been detected; and

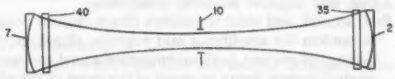
switching the bandwidth of the tracking loop from an acquire bandwidth to a narrower tracking bandwidth in response to the indication signal.

4,243,942

FULLY RELAYED REGENERATIVE AMPLIFIER

Alexander J. Glass, Berkeley, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 11, 1978, Ser. No. 868,642
Int. Cl.³ H01S *3/10, 3/05*
U.S. Cl. 330—4.3 **21 Claims**



1. A regenerative laser apparatus comprising:

a first focusing means for focusing laser light;

a second focusing means for focusing laser light with said first and second focusing means being spaced apart to form a common focusing region therebetween;

a first reflective means for reflecting laser light;

at least one second reflective means for reflecting laser light;

said first and second reflecting means being positioned and optically aligned to form a closed optical path of aperture in excess of 20 cm. wherein laser light traversing said optical path also traverses the common focusing region;

a spatial filtering means for suppressing the effects of beam breakup, the spatial filtering means being located at the common focusing region;

optical relay means for forming an optical relay of substantially zero optical path difference by positioning and maintaining the optical alignment of the first and second focusing means and the first and second reflective means in the closed optical path whereby laser light in a regenerative amplifier can be reimaged in the optical relay;

switch means for switching laser light into and out of the closed optical path

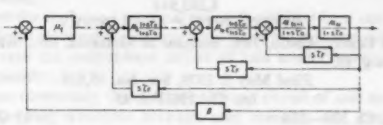
amplifier means for amplifying light in the closed optical path until the laser light is in excess of 4 J/cm².

4,243,943

FEEDBACK SYSTEMS

Edward M. Cherry, Glen Waverley, Australia, assignor to Monash University, Clayton, Australia

Filed Jul. 31, 1978, Ser. No. 929,793
Claims priority, application Australia, Feb. 1, 1978, PD3221
Int. Cl.³ H03F *1/34*
U.S. Cl. 330—100 **42 Claims**



1. A low pass feedback amplifier system, comprising:

a multi-stage amplifier constituting the forward path of the low pass feedback amplifier system, said amplifier having a plurality of stages operatively connected in cascade, said stages having respective predetermined gains, poles, and zeros; and

at least two feedback networks operatively connected to said forward path to form a set of nested feedback loops, said loops being nested one within the next, each said feedback network having a predetermined transfer function in complex frequency notation of the approximate form sr, and

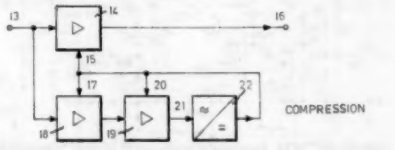
wherein the gains, poles and zeros of the individual stages of the forward path, and the transfer functions of the feedback networks are predetermined such that the stage or stages within the innermost of the feedback loops has a return difference which changes at a rate greater than Bode's limit for unconditional stability.

4,243,944

CIRCUIT FOR AUTOMATIC DYNAMIC COMPRESSION OR EXPANSION

Ernst Schröder, Hanover, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 22, 1978, Ser. No. 944,841
Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743279
Int. Cl.³ H03G *7/00*
U.S. Cl. 330—135 **7 Claims**



1. A circuit for the automatic dynamic compression or expansion of an input signal, comprising

input and output terminal;

first controllable adjusting means coupled across said input and output terminals to form a useful signal path between said terminals;

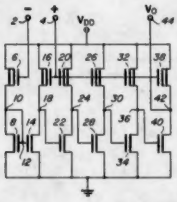
a branch path including second controllable adjusting means and a control generator connected to the output thereof, the output of said control generator being coupled to said first controllable adjusting means for varying the gain of said useful signal path and to said second controllable adjusting means for varying the gain of said branch path, the variation in the gain of said branch path being in a direction opposite to the direction of change in the magnitude of said input signal; wherein the improvement comprises

means for coupling the input of said second controllable adjusting means to one of said input and output terminals, said input signal being compressed when the input of said second controllable adjusting means is connected to said input terminal and being expanded when the input of said second controllable adjusting means is connected to said output terminal.

4,243,945
DIFFERENTIAL AMPLIFIER

Kim Eckert, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 1, 1979, Ser. No. 35,039
Int. Cl.[3] H03F 3/45
U.S. Cl. 330—253 12 Claims



1. A differential amplifier circuit for receiving first and second potentials and amplifying the difference therebetween, comprising:

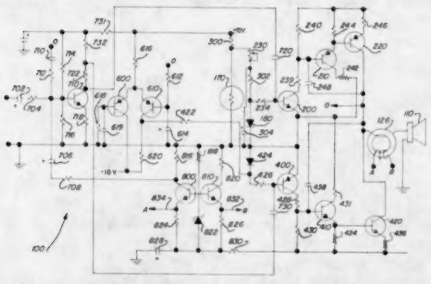
an input stage for receiving said first and second potentials; and

a plurality of amplifying stages coupled in sequence for amplifying said difference each having a first input coupled to one of said first and second potentials for reducing common mode gain and a second input coupled to an output of a previous stage.

4,243,946
CLASS-B CURRENT SOURCE AMPLIFIER

Chien S. Wang, 1201 Hudson St., Denver, Colo. 80220

Filed May 19, 1978, Ser. No. 907,803
Int. Cl.[3] H03F 3/30
U.S. Cl. 330—265 18 Claims



1. A feedback current source amplifier receptive of an audio signal for amplifying said audio siganal and for driving a load with said amplified audio signal, said amplifier comprising:

means for generating a dc bias current,

a positive amplifier half receptive of said audio signal for applying an amplified positive audio signal to the input of said load, said positive amplifier half also being simultaneously receptive of said dc bias current for applying an amplified positive dc current to said load input, said positive amplifier comprising:

(a) first, second, and third transistors direct current coupled in tandem for amplifying said positive signal and said dc bias current, both said positive signal and said dc bias current being received at the input of the aforesaid first transistor, the aforesaid third transistor being a power transistor, having its output coupled to said load input,

(b) a temperature sensitive diode physically placed near the outer casing of the aforesaid power transistor for sensing the temperature of said outercasing, said diode being interconnected across the output of said generating means for reducing said dc bias current in proportion to a temperature increase in said outer casing due to increasing load demands on said power transistor, said reduced dc bias current being sufficient to substantially deliver said amplified positive dc current, and

(c) a thermistor physically placed in the ambient environment surrounding said amplifier for sensing the temperature of said environment, said thermistor being interconnected across the output of said generating means for reducing said dc bias current in proportion as the temperature of said ambient environment increases, said reduced dc bias current being sufficient to substantially deliver said amplified positive dc current,

means for generating a predetermined dc voltage level,

the first input of a differential amplifier being connected to said load input and receptive of any dc voltage potential at said load input and the second input of said differential amplifier being receptive of said predetermined dc voltage level for comparing said dc voltage potential to said predetermined dc voltage level and for generating a control current whose variation is proportional to the difference between said predetermined dc voltage level and said dc voltage potential, and

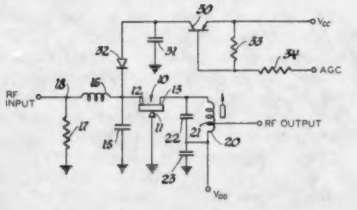
a negative amplifier half receptive of said audio signal for applying an amplified negative audio signal to said load input, said negative amplifier half also being simultaneously receptive of said control current for applying an amplified negative dc current to said load input, said negative dc current combining with said positive dc current from said positive amplifier at said load input to maintain a zero dc voltage level at said load input, said amplified negative audio signal combining with said amplified positive audio signal to form said amplified audio signal, said negative amplifier comprising:

first, second, and third transistors direct current coupled in tandem for amplifying said negative signal and said dc control current, both said negative signal and said dc control current being received at the input of the aforesaid first transistor, the aforesaid third transistor being a power transistor having its output coupled to said load input.

4,243,947
RADIO FREQUENCY AMPLIFIER WITH GAIN CONTROL

Timothy P. Glennon, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 28, 1979, Ser. No. 24,706
Int. Cl.[3] H03F 3/16; H03G 3/30
U.S. Cl. 330—284 2 Claims



1. A radio frequency amplifier with gain control comprising:

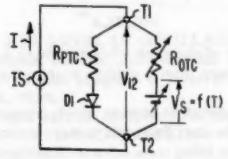
a field effect transistor having source, gate and drain;
means effective to bias the transistor as an amplifier with grounded gate, source input and drain output, said bias means including a bias resistor between source and ground effective to establish a source bias voltage to normally bias the field effect transistor near pinch-off;
a current source;
a diode having a dynamic impedance at radio frequencies which varies inversely with direct current therethrough, the diode having an anode connected to the current source flows and a cathode connected in series with the bias resistor, whereby increased current from the current source flows through the bias resistor, thus increasing the transistor source voltage and reducing amplifier gain, but whereby the diode prevents the current source from adversely affecting the amplifier input impedance;
a radio frequency signal shunt coupled to the diode anode, whereby increasing direct current through from the current source through diode causes increasing shunt of input radio frequency signal away from the transistor source through the diode to provide further gain reduction and improve the amplifier overload characteristics.

4,243,948

SUBSTANTIALLY TEMPERATURE-INDEPENDENT TRIMMING OF CURRENT FLOWS

Otto H. Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 8, 1979, Ser. No. 37,139
Int. Cl.³ H03F *3/04*
U.S. Cl. 330—289 **44 Claims**



1. In combination:
current source having a first and second terminals between which a current of predetermined temperature coefficient respective to a temperature T is generated;
adjustable zero-temperature-coefficient resistance means between said first and second terminals for conducting an adjustable, small portion of said current as a trim current;
a path between said first and second terminals for conducting the trimmed remainder of said current, said path being through a series connection essentially consisting of
at least one semiconductor diode means poled for forward conduction and maintained at a temperature close to T, and
positive-temperature-coefficient first resistance being maintained at a temperature close to T and being of such value that the potential across said series connection exhibits the same temperature coefficient as the current generated by said current source, causing said trim current to be a substantially temperature-independent fraction of the current generated by said current source.

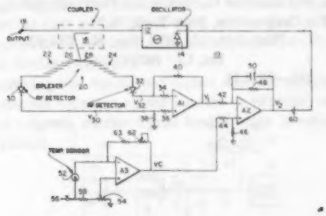
4. In combination with a source of current with temperature-independent quiescent value,
a current mirror amplifier comprising:
input and common terminals connected to receive said current with temperature-independent quiescent value;
an output terminal;
a bipolar master mirroring transistor and a bipolar slave mirroring transistor of like type, each having respective emitter and base and collector electrodes, having a respective emitter-collector circuit between its emitter and base electrodes, having a respective emitter-collector circuit between its emitter and collector electrodes;
direct coupled feedback means between the emitter-collector circuit of said master mirroring transistor and its emitter-base circuit for applying a potential across its emitter-base circuit that conditions its emitter-collector circuit to conduct substantially all of any current thereto applied which is of the polarity associated with normal transistor action;
means for applying a potential across the emitter-base circuit of said slave mirroring transistor like unto that appearing across the emitter-base circuit of said master mirroring transistor;
means connecting the emitter-collector circuit of said slave mirroring transistor between said common and output terminals;
means connecting the emitter-collector circuit of said master mirroring transistor between said common and output terminals in a poling such that said current with temperature-independent quiescent value is conducted by normal transistor action, which means includes
positive-temperature-coefficient resistance being in first series connection with the emitter-base circuit of said master mirroring transistor, and being of such value that a voltage with temperature-independent quiescent value appears across said first series connection.

4,243,949

FREQUENCY STABILIZATION TECHNIQUE FOR MICROSTRIP OSCILLATORS

David L. Saul, El Cajon, and David Rubin, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 17, 1978, Ser. No. 961,580
Int. Cl.³ H03L *7/04*
U.S. Cl. 331—9 **5 Claims**

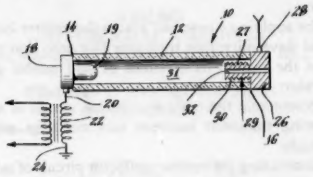


1. A millimeter wave frequency stabilized MIC oscillator network comprising:
an MIC oscillator having an input and an output;
a signal coupler coupled to said output;
a frequency diplexer coupled to said coupler, said diplexer having first and second passbands of frequencies;
first means for detecting the power output of said diplexer in said first passband;
second means for detecting the power output of said diplexer in said second passband;
feedback means connected to said first and second means and to said input for varying the voltage to said input to thereby control the operating frequency of said oscillator, said feedback means further comprising heat-to-current transducer means disposed in thermal proximity to said diplexer for varying the voltage to said input commensurately with variation in the temperature of said diplexer.

4,243,950
RANDOM NOISE GENERATORS

Joseph M. Proud, Jr., Wellesley, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Apr. 4, 1977, Ser. No. 784,032
Int. Cl.[3] H03B 29/00
U.S. Cl. 331—78 21 Claims

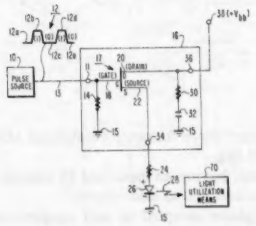


1. A radio frequency random noise generator comprising:
a. an elongated hollow housing open at both ends, said housing being a rigid, electrical insulating, low leakage material;
b. cathode means adapted to cooperate with and seal one end of said housing, said cathode means being provided with an external terminal and an elongated portion extending into said housing, said cathode means terminal being adapted to be coupled to the negative terminal of a DC source of power;
c. anode means adapted to cooperate with and seal the other end of said housing, said anode means being provided with external terminal and an elongated portion extending into said housing, said anode and cathode means being spaced apart at least 3 centimeters; and
d. output means, said output means having one end connected to said anode means terminal and the other end thereof adapted to be coupled to electrical ground.

4,243,951
HIGH REPETITION RATE DRIVER CIRCUIT FOR MODULATION OF INJECTION LASERS

Herbert J. Wolkstein, Livingston; Brian R. Dornan, Bridgewater, and Jitendra Goel, Kendall Park, all of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,902
Int. Cl.[3] H01S 3/13
U.S. Cl. 331—94.5 H 6 Claims

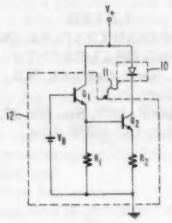


1. An injection laser including a modulator for driving said injection laser in response to modulating signals, said modulator comprising:
a current conducting device for controlling the flow of current through said laser, said device having input, output and control electrodes, said modulating signals being applied to said control electrode, and one of said input and output electrodes being coupled to said laser; and
biasing means coupled to one of said input and output electrodes for biasing said current conducting device at a first current level and for biasing said laser at a predetermined value near but below the lasing threshold of said laser, said biasing means including:
a first resistor in series with said laser; and
a serially connected inductor and second resistor connected in parallel across said laser and said first resistor, said inductor being of a value to present an isolating impedance at the frequency of said modulating signals, and said current conducting device being responsive to said modulating signals at said control electrode for, in response to each signal, increasing the current through said laser to a value above its lasing threshold.

4,243,952
TEMPERATURE COMPENSATED BIAS CIRCUIT FOR SEMICONDUCTOR LASERS

David R. Patterson, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1978, Ser. No. 955,625
Int. Cl.[3] H01S 3/13
U.S. Cl. 331—94.5 S 11 Claims



1. In a circuit of the type wherein power is supplied to a semiconductor laser from a voltage source, the improvement comprising:
temperature-dependent current supply means for applying current to the laser from said voltage source, said current supply means being responsive to the temperature thereof for varying the current magnitude directly with temperature in such degree as to maintain the light output of the laser more constant with change in the laser operating temperature; and
means for thermally coupling said temperature-dependent current supply means with the laser
so that continuously related temperatures exist therebetween.

4,243,953
VOLTAGE CONTROLLED OSCILLATOR PRESENTING HIGH IMPEDANCE TO PARALLEL RESONANT TANK CIRCUIT

Alvin R. Balaban, Lebanon, and Steven A. Steckler, Clark, both of N.J., assignors to RCA Corporation, New York, N.Y.

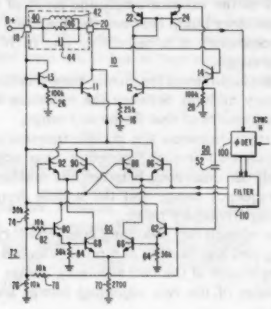
Filed Feb. 16, 1979, Ser. No. 12,811
Int. Cl.[3] H03B 5/12; H03L 7/08
U.S. Cl. 331—117 R 10 Claims

1. A variable-frequency oscillator adapted to be controlled by a control voltage source, comprising:
first and second transistors each including base, emitter and collector electrodes, said emitter electrodes of said first and second transistors being coupled together and to a source of current;
third and fourth transistor means each including base and emitter electrodes, the emitter electrodes of said third and fourth transistor means being coupled to said base electrodes of said first and second transistors, respectively, the base of said third transistor means being coupled to a source of energizing voltage, and the base of said fourth transistor being coupled to said collector of said first

transistor for forming a regenerative circuit loop capable of oscillation;

a parallel-resonant circuit coupled between said collector of said first transistor and said source for establishing a frequency-sensitive phase characteristic in said loop; and

variable phase-shifting means having an input coupled to a



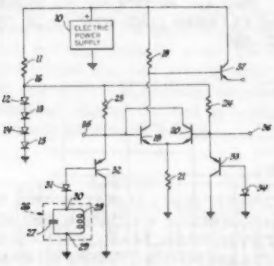
first point on said regenerative loop and an output coupled to a second point on said regenerative loop for extracting an oscillatory signal from said regenerative loop at said first point and for injecting a phase-shifted version of said oscillatory signal at said second point on said loop under the control of the control voltage source for establishing an oscillation frequency.

4,243,954

LOW LEVEL LC OSCILLATOR

Burtron D. Schertz, Kokomo, and Frederick A. Aldridge, Russiaville, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Jun. 19, 1979, Ser. No. 50,074
Int. Cl.³ H03B *5/12*
U.S. Cl. 331—117 R **1 Claim**



1. A low level oscillator suitable for use as a radio receiver local oscillator and adaptable to integrated circuit construction comprising, in combination:

first and second differentially connected transistors, each having a base and the second having a collector connected to the base of the first;

first means including a third transistor with a base-emitter junction effective to establish a first reference voltage relative to ground on the second transistor base and supply electric current thereto;

a fourth transistor having an emitter connected to the first transistor base, a grounded collector and a base;

an LC tank coupled between the fourth transistor base and ground;

second means cooperating with the fourth transistor base-emitter junction to maintain the voltage on the first transistor base higher by the first reference voltage, in spite of temperature variation, than the voltage across the tank, whereby alternate conduction of the first and second transistors is timed to tank oscillation;

a source of electric power having a second reference voltage higher than the first and being effective to deliver electric current;

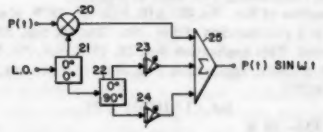
impedance means connecting the electric power source to the first transistor base, whereby current is supplied alternately to the tank and the second transistor in proper timing and phase to maintain tank oscillation, the fourth transistor reducing the magnitude of tank voltage oscillation to a low level.

4,243,955

REGULATED SUPPRESSED CARRIER MODULATION SYSTEM

Sam M. Daniel, and Kenneth M. Peterson, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 28, 1978, Ser. No. 920,048
Int. Cl.³ H03C *1/52*; H04B *1/12*
U.S. Cl. 332—37 D **14 Claims**



12. A method of regulating modulator apparatus to substantially eliminate carrier signal feedthrough, said method comprising the steps of:

(a) providing first and second substantially orthogonal versions of a carrier signal;

(b) modulating one of the first and second versions of the carrier with a selected modulating signal;

(c) weighting portions of the first and second versions of the carrier so that a combined value of the first and second versions of the carrier is substantially equal to the carrier signal feedthrough; and

(d) combining the modulated signal and the weighted first and second versions of the carrier to provide an output signal wherein carrier signal feedthrough is substantially suppressed.

4,243,956

AUTOMATIC EQUALIZER FOR A SYNCHRONOUS DIGITAL TRANSMISSION SIGNAL

Michel Lemoussu, Saint Michel sur Orge, and Claude Cardot, Gif-sur-Yvette, both of France, assignors to Compagnie Industrielle des Telecommunications cit Alcatel, Paris, France

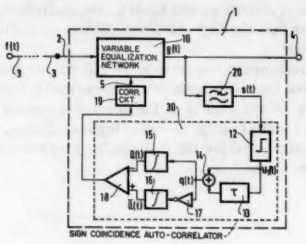
Filed Mar. 9, 1979, Ser. No. 19,245
Claims priority, application France, Mar. 10, 1978, 78 06953
Int. Cl.³ H04B *3/08*
U.S. Cl. 333—18 **5 Claims**

1. An automatic equalizer for compensating for the linear distortion experienced by a digital signal when transmitted over a transmission channel **3**, said digital signal comprising a train of digital pulses of a constant unit time interval, the equalizer comprising:

(a) a variable equalization network **10** having a feedback control loop comprising:

(1) a sign-coincidence auto-correlator **30** for correlating

the polarities of a first and a second version of the equalized signal; and



(2) means for delaying **13** the second version of the equalized signal with respect to the first version by an integer multiple of said unit time interval.

4,243,957

UNIVERSAL EQUALIZER

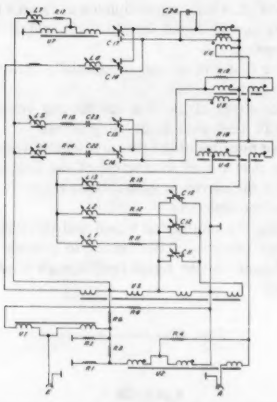
Hans-Joachim Schmidt, Nuremberg, Fed. Rep. of Germany, assignor to Te ka De Felten & Guilleaume Fernmeldeanlagen GmbH, Nuremberg, Fed. Rep. of Germany

Continuation of Ser. No. 881,510, Feb. 27, 1978, abandoned, which is a continuation of Ser. No. 724,614, Sep. 20, 1976, abandoned. This application Jul. 28, 1978, Ser. No. 928,884

Claims priority, application Fed. Rep. of Germany, Sep. 20, 1975, 2541977

Int. Cl.³ H03H *7/03*

U.S. Cl. 333—28 R **3 Claims**



1. An equalizer of the type operative for equalizing the attenuation-versus-frequency curve of a signal carrier transmission system within a predetermined frequency range by providing a compensatory attenuation-versus-frequency transfer function compensating for the unequalized attenuation-versus-frequency curve of the signal carrier transmission system,

the equalizer comprising

input circuit means;

output circuit means;

N compensating means connected between the input and output circuit means of the equalizer and operative for establishing a compensatory attenuation-versus-frequency transfer function comprised of N compensatory attenuation-versus-frequency-curve bumps,

each of the N compensating means comprising a respective reactor-resistor circuit stage operative for establishing a respective one of the N bumps of the compensatory transfer function of the equalizer,

each reactor-resistor circuit stage including amplitude-selecting means adjustable for changing the amplitude of the respective compensatory bump,

each reactor-resistor circuit stage furthermore including frequency-selecting means adjustable for shifting the frequency of the extreme-amplitude point of the respective compensatory bump between the minimum and maximum end frequencies of a respective one of N different frequency ranges,

each of the N different frequency ranges including a middle frequency midway between the minimum and maximum end frequencies of that frequency range,

the difference between the middle frequency and the end frequencies within each frequency range being in excess of one half the difference between the middle frequency of that frequency range and the middle frequency of the adjoining frequency range,

the flanks of each two adjoining compensatory bumps overlapping and intersecting at a point which is at least 0.6 of the amplitudes of the two adjoining bumps whenever the amplitudes of the two adjoining bumps are set to equal values,

the N middle frequencies being substantially equidistantly spaced when measured along a normalized frequency axis the constituent portions of which have been expanded and compressed in correspondence to the function d*, wherein

$$d^* = k \cdot 10^{[3.76q - 5.32\sqrt{q} + 2.07]}$$

k is a simple proportionality constant and

q is normalized frequency f/f_{max}.

4,243,958

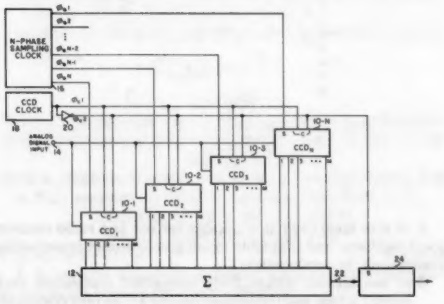
PHASE-MULTIPLEXED CCD TRANSVERSAL FILTER

Doran K. Wilde, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 26, 1979, Ser. No. 33,361

Int. Cl.³ H03H *15/02*; G11C *19/28, 27/00*

U.S. Cl. 333—165 **1 Claim**



1. A phase-multiplexed CCD transversal filter, comprising:

a multi-phase sampling clock source for producing a plurality of sampling clock signals having a predetermined frequency and different predetermined phases of a single clock cycle;

a plurality of charge coupled devices defining serially arranged delay elements, each of said charge coupled devices receiving a different sampling clock signal so that said charge coupled devices acquire samples of an input signal in a predetermined consecutive order;

means for sensing the value of the charge stored in said

serially arranged delay elements and combining predetermined weighting coefficients therewith; and

means for summing said sensed and weighted values to provide an output signal which is related to the input signal in accordance with a predetermined transfer function,

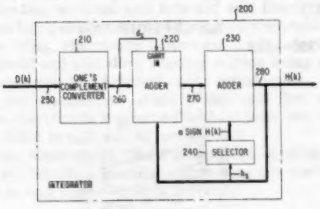
wherein said plurality of charge coupled devices consists of N CCD's connected in parallel, said multiphase sampling clock source produces N clock signals having the same frequency f_c so that the apparent sampling frequency $f_s = Nf_c$, and each CCD has M taps so that said filter appears to comprise a single CCD having a length of N times M elements.

4,243,959

ADAPTIVE FILTER WITH TAP COEFFICIENT LEAKAGE

Donald L. Duttweiler, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 21, 1979, Ser. No. 50,890
Int. Cl.³ H03A *15/00, 17/00*
U.S. Cl. 333—166 **4 Claims**



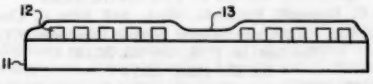
1. A digital adaptive filter including a tapped delay line and apparatus coupled to said delay line for providing a tap coefficient signal, said tap coefficient providing apparatus (**100, 200, 300, 400**) including leak apparatus (**40, 240**) for introducing leakage in said tap coefficient signal and CHARACTERIZED IN THAT said digital filter further comprises means (**50, 60**) for controlling the strength of said tap coefficient leakage, said controlling means including means for weakly driving said tap coefficient signal toward zero said driving means including means (**410, 420**) responsive to an updating component (**450**) of said tap coefficient and responsive to said tap coefficient (**470, 480**) for intermittently introducing leakage.

4,243,960

METHOD AND MATERIALS FOR TUNING THE CENTER FREQUENCY OF NARROW-BAND SURFACE-ACOUSTIC-WAVE (SAW) DEVICES BY MEANS OF DIELECTRIC OVERLAYS

David J. White; Carl N. Helmick, Jr., and Robert E. Hunt, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1978, Ser. No. 933,395
Int. Cl.³ H03H *9/64, 9/42, 9/25;* H01L *41/22*
U.S. Cl. 333—196 **8 Claims**



1. A surface acoustic wave device comprising;

a substrate, for supporting the propagation of surface acoustic waves;

an input transducer formed on said substrate for producing surface acoustic waves;

an output transducer formed on said substrate, for receiving surface acoustic waves; and

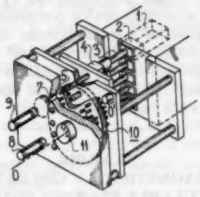
an electrically nonconducting film deposited on and in contact with said substrate and transducers, said film having a predetermined thickness to obtain a desired center frequency of said surface acoustic waves.

4,243,961

APPARATUS FOR SELECTING THE RESONANCE FREQUENCY OF A MICROWAVE DEVICE COMPRISING A PLURALITY OF CAVITIES

Georges Faillon, and Claude Carreyve, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 25, 1979, Ser. No. 51,957
Claims priority, application France, Jun. 29, 1978, 78 19503
Int. Cl.³ H01P *7/06*
U.S. Cl. 333—233 **10 Claims**



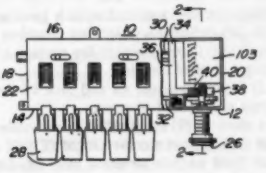
1. Apparatus for selecting the resonance frequency of a microwave device comprising n aligned microwave cavities, each including means for varying the volume and hence the resonance frequency of the cavity, said n volume varying means bearing against n stops, said n stops being aligned on one and the same support, the degree of penetration of each stop within the support being adjustable, said support carrying a plurality of lines of n stops against which the volume varying means may be successively applied.

4,243,962

DIGITAL TUNING ELEMENT AND METHOD OF MAKING SAME

Joseph F. Larkin, Holland; Harold M. Cassidy, Hatboro, both of Pa.; John W. Woodcock, Bellmawr, N.J., and William M. Dunn, Philadelphia, Pa., assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 18, 1978, Ser. No. 897,420
Int. Cl.³ H03J *5/06, 5/08*
U.S. Cl. 334—7 **34 Claims**



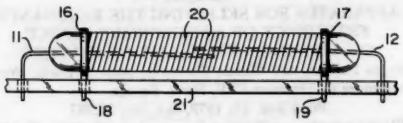
14. The method of claim **13** in which the cylindrical sections have indexing pins and mating openings, and the sections are assembled and secured together by inserting the indexing pins of one of said sections into the mating openings of the next section during the step of assembling the sections in said predetermined order.

15. The method of claim **14** in which said segments are aligned and secured with each of their axes along a common axis for said body, and including the step of securing to the body an end portion having a central shaft along the common axis of said sections for rotation of said body thereabout.

4,243,963
CONSTRUCTION OF A PRINTED WIRING CARD MOUNTABLE REED RELAY

Khaja M. Jameel, Glen Ellyn, and James V. Koppensteiner, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, North Lake, Ill.

Filed Apr. 2, 1979, Ser. No. 26,141
Int. Cl.³ H01H *1/66*
U.S. Cl. 335—151 **5 Claims**



1. An electromagnetic switching device including an elongated capsule of dielectric material and a plurality of switching contacts located within and supported by said capsule, said electromagnetic switching device comprising;

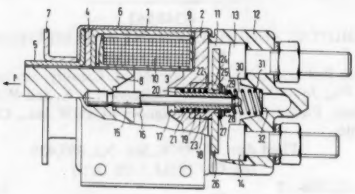
a helix of conductive material bonded to a substantial portion of the exterior periphery of said capsule, said helix including first and second termination ends; and

first and second terminals bonded to said first and second termination ends respectively.

4,243,964
ELECTROMAGNETICALLY OPERATED SWITCH, PARTICULARLY STARTER SWITCH FOR AUTOMOTIVE STARTER MOTORS

Karl-Heinz Bögner, Neuhausen, and Martin Sprenger, Vaihingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 7, 1979, Ser. No. 10,051
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813699
Int. Cl.³ H01H *7/16, 75/00*
U.S. Cl. 335—156 **13 Claims**



1. Electromagnetically operated switch having

a housing (**6, 12**) defining a switching chamber (**11**) therein;

a solenoid coil (**10**) located within the portion of the housing and having a central opening;

a core (**1, 2**) located against an end face of the coil and at least in part across said opening;

an armature element (**8**) longitudinally movable in the opening of the coil against a return force (P);

at least one fixed switch terminal (**13, 14**) located in the housing and extending into the switching chamber;

a movable contact carrier (**26, 49**) located in the housing;

a contact release spring (**31**) engaging the contact carrier and tending to push the contact carrier away from, and out of engagement with, the at least one switch terminal;

and connecting means coupling the armature element and the contact carrier together, comprising

a switching rod (**15**) connected to the armature element and movable therewith;

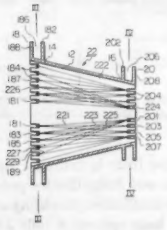
contact engagement force transmission means (**16; 19, 33, 35, 45**) engageable with both the switching rod (**15**) and the contact carrier (**26, 49**) and transmitting movement of the armature, and hence of the switching rod upon energization of the solenoid to move the contact carrier in the direction of the fixed switching terminal to effect closing of the switch, said armature and switching rod being movable over a path length in excess of the length of the path of the contact carrier upon engagement thereof with the fixed terminal, thereby providing over-travel of the armature and the switching rod;

and contact release force transmission means (**27, 28, 29, 30; 50, 51**) secured to the switching rod (**15**) and engageable with the contact carrier upon deenergization of the solenoid and return movement of the armature (**8**) under the return force (P) after the switching rod and hence the armature have travelled over said excess path length to tear the contact carrier from the fixed switch terminal (**13, 14**) in case of sticking of the contact carrier thereto and failure of the contact release spring (**31**) to push the contact carrier away from the fixed switch terminal.

4,243,965
DEFLECTION COIL

Norio Yoshikawa, Tokyo, Japan, assignor to Denki Onkyo Co., Ltd., Toyko, Japan

Filed Mar. 8, 1978, Ser. No. 884,401
Claims priority, application Japan, Mar. 8, 1977, 52-277793[U]
Int. Cl.³ H01F *7/00*
U.S. Cl. 335—213 **3 Claims**



1. A deflection coil comprising:

(a) a coil frame having a flared coil bobbin and guides provided at the front and rear ends of the coil bobbin and integrated therewith, wherein the guide at the front end of the coil frame has a first plurality of circumferentially spaced coil winding insertion slots therein and the guide at the rear end of the coil frame has a second plurality of circumferentially spaced coil winding insertion slots therein, the first plurality of slots being greater than the second plurality of slots, and

(b) saddle-type coil means along the inside surface of the coil frame having a plurality of wires passing through predetermined coil winding insertion slots in the guide at the front and rear ends of the coil frame, and having a distribution in said slots for producing a magnetic field having a strong pin-shaped field at the front end thereof and a barrel-shaped field at the rear end thereof and for reducing misconvergence.

4,243,966
ELECTROSTATIC SHIELDING OF NONSEQUENTIAL DISC WINDINGS IN TRANSFORMERS

Robert C. Degeneff, Pittsfield, Mass., and John C. Crouse, Rome, Ga., assignors to General Electric Company, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,157
Int. Cl.³ H01F *15/14*
U.S. Cl. 336—70 **2 Claims**

1. A disc coil winding arrangement for a transformer comprising:

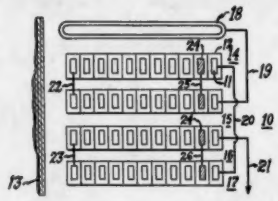
a plurality of turns of insulated electrical conductors radially

disposed around a winding form in a disc winding configuration;

a plurality of winding sections of said radially disposed conductors linearly arranged along said winding form;

an electrostatic ring shield adjacent one of said winding sections and electrically connected with another of said winding sections;

said winding sections being electrically inter-connected in a nonsequential arrangement wherein a first one of said winding sections is electrically connected with a second one of said winding sections and a third one of said wind-



ing section is electrically connected with a fourth one of said winding sections, said first and said fourth winding sections being electrically connected together, said second section being electrically connected to the electrostatic ring shield and said third winding section being adapted for connection to a terminal of the transformer;

at least one electrostatic shield within said first winding section electrically connected with at least one electrostatic shield in said second section; and

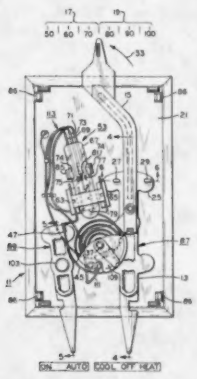
at least one electrostatic shield in the third winding section being electrically connected with at least one electrostatic shield in said fourth winding section.

4,243,967

THERMOSTAT AND METHOD OF OPERATING

James P. Frank, Rock Falls, Ill., assignor to General Electric Company, Fort Wayne, Ind.

Filed Jan. 22, 1979, Ser. No. 5,236
Int. Cl.³ H01H *37/52*
U.S. Cl. 337—340 **26 Claims**



1. A thermostat adapted to control the energization of a conditioning system operable generally in a heating mode and a cooling mode so as to effect the regulation of the temperature of a given space in which the thermostat may be located, the thermostat comprising:

a casing including a base;

a post rotatably mounted to said base;

a bimetal means movable in respective ones of a plurality of adjusted positions for sensing the temperature of the space, said bimetal means having a generally spiral configuration with generally radially spaced inner and outer ends and said inner end being secured to said post so as to be conjointly rotatable therewith;

means mounted to said base for selecting an operating mode of the thermostat and movable between an off position, a heating mode position and a cooling mode position;

a switch device mounted to said base and including means operable generally for switching between a pair of switching positions effecting the energization and the deenergization of the conditioning system when said mode selecting means is in the heating mode position and the cooling mode position thereof, respectively;

means secured generally to said outer end of said bimetal means and associated with said switch device for translating the temperature sensing movement of said bimetal element so as to effect the operation of said switching means between its switching positions;

a temperature selector manually movable with respect to said base within a pair of predetermined temperature ranges so as to set a preselected temperature for the given space and operably connected with said post so as to conjointly rotate said post and said bimetal means to a respective one adjusted position of the plurality thereof correlative with the preselected temperature setting of said temperature selector within one of the predetermined temperature ranges upon the manual movement of said temperature selector;

a pair of predeterminately spaced apart abutments on one of said mode selecting means and said temperature selector; and

abutment means on the other of said mode selecting means and said temperature selector, one of said abutment pair and said abutment means being movable with lost motion with respect to the other of said abutment pair and said abutment means so as to drivingly engage one of said abutments of said pair thereof and said abutment means upon the manual movement of said temperature selector from the preselected temperature setting thereof within the one predetermined temperature range toward another preselected temperature setting thereof within the other of the predetermined temperature ranges, the driving engagement of said one abutment and said abutment means effecting the conjoint movement with said temperature selector of said mode selecting means from one of the heating mode position and the cooling mode position thereof through the off position to the other of the heating position and the cooling position and the lost motion movement between said abutments and said abutment means defining a manual movement of said temperature selector across at least a part of each of the one and other predetermined temperature ranges when said mode selecting means is in its off position.

4,243,968

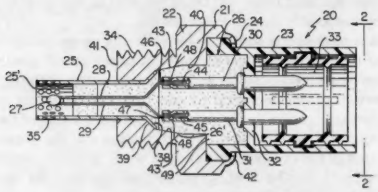
TEMPERATURE SENSING UNIT, PARTS THEREFOR AND METHODS OF MAKING THE SAME

Douglas R. Scott, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Apr. 25, 1979, Ser. No. 33,331
Int. Cl.³ H01C *3/04*
U.S. Cl. 338—28 **40 Claims**

1. In a temperature sensing unit having a housing means provided with a chamber therein leading from a temperature sensing area of said housing means to a connector area of said housing means and having an electrical temperature sensor disposed in said sensing area and interconnected by lead means to electrical connector means disposed in said connector area with sealing means being disposed in said chamber to sealingly fill the same and secure said sensor, lead means and connector

means in place, the improvement wherein said sealing means comprises a preformed one-piece resilient member that was



formed separately from said lead means, connector means, sensor and housing means.

4,243,969

LAYER RESISTOR ELEMENT

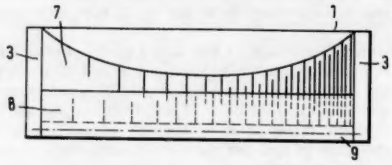
Wolf-Erhard Steigerwald; Heinz-Jürgen Siede; Bela Rösner, all of Bad Neustadt, and Jürgen Zimmermann, Fuchsstadt, all of Fed. Rep. of Germany, assignors to PREH, Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co., Bad Neustadt, Fed. Rep. of Germany

Filed Apr. 17, 1979, Ser. No. 30,801

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816665

Int. Cl.³ H01C *1/012*

U.S. Cl. 338—309 **11 Claims**



1. A layer resistor element for use in a variable resistor having a non-linear resistance characteristic, comprising

(a) an insulating substrate,

(b) two terminal electrodes provided at opposite ends of the substrate,

(c) a first resistance layer disposed on the substrate in contact with said terminal electrodes,

(d) two comb-like sets of separating slots cut into said first resistance layer alternatingly from opposite sides thereof so as to mesh with each other, the area of the slots being negligible relatively to the area of the first resistance layer, and the lengths and spacings of the slots of each set being defined in accordance with said non-linear characteristic, and

(e) a second resistance layer disposed on the first resistance layer and having a greater resistivity than the first resistance layer, the second resistance layer extending beyond the first resistance layer at a side thereof to form a slide way for a wiper of said variable resistor.

4,243,970

OPEN CIRCUIT ALARM

Patrick C. Hardee, 6923 S. Cherry St., and Malin L. Jacobs, 7022 S. Dexter St., both of Littleton, Colo. 80122

Filed Apr. 6, 1979, Ser. No. 27,607

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—52 D **5 Claims**

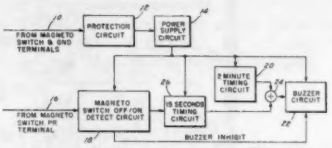
1. An alarm circuit for indicating a main power switch on with the magneto switch off in a light aircraft comprising:

(a) power line means connected to the battery, ground and magneto power terminals of a magneto switch,

(b) power divider circuit means electrically connected in said power line means providing a reference voltage powering an audio alarm circuit,

(c) magneto on-off detector circuit means electrically connected with the power line means to inhibit the audioalarm circuit when the power switch and magneto switch are in the on position thereby providing an inhibiting voltage that the voltage to it is above the reference voltage,

(d) long period timing circuit means electrically connected to a reference voltage line to the audio alarm circuit for inhibiting the audioalarm circuit while in a charged high state from the current in the power line above the refer-



ence voltage when the power and magneto switches are on and to discharge after a predetermined time when the power switch is turned on and the magneto switch is off so as to activate the audioalarm circuit

(e) short period timing circuit means, electrically connected with the power line means and an output line from the detector circuit means providing a current output after a predetermined time when the inhibiting voltage in said magneto on-off detector circuit means drops below the reference voltage, when the magneto switch is turned off and the main power switch is in the on position, and

(f) said audioalarm circuit means activated by current output from said short period timing circuit means.

4,243,971

TEST CIRCUIT FOR AUTOMOTIVE PASSENGER RESTRAINT SYSTEMS

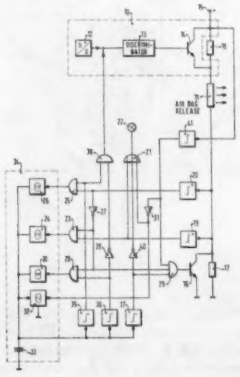
Wadym Suchowerskyj; Berthold Seibel, both of Schwieberdingen, and Peter Werner, Wiernsheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 9, 1979, Ser. No. 82,572

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1978, 2851333

Int. Cl.³ G08B *21/00*

U.S. Cl. 340—52 H **10 Claims**



1. A test circuit for automotive passenger safety systems, said safety system including a trigger signal discriminator and a power output stage actuated by said discriminator, said

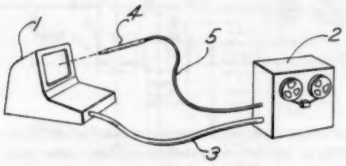
power output stage serving to actuate said safety system, and wherein, according to the invention, said test circuit comprises a semiconductor switch (16) which may be placed in electrical series connection with said power output stage (14) and said safety system (11), said test circuit including means for preventing simultaneous conduction of said switch (16) and said power output stage (14) during a test.

4,243,972

METHOD OF AND APPARATUS FOR SIGNATURE CODED TARGET RECOGNITION

Stephen M. Toussaint, Elkhart, Ind., assignor to Esmark, Incorporated, Mishawaka, Ind.

Filed Mar. 29, 1979, Ser. No. 25,266
Int. Cl.³ G09F *9/30*
U.S. Cl. 340—146.3 SY **8 Claims**



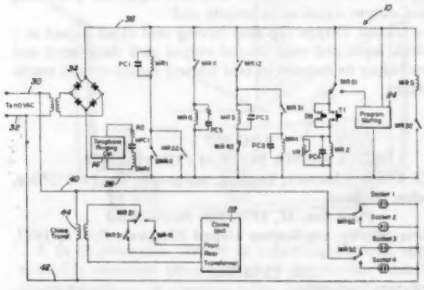
1. In a method for signature coded target recognition, the steps of assigning to each of multiple targets a unique binary characteristic, selecting a particular target from among the multiplicity of targets, causing each target to successively assume its unique characteristic binary state, sensing the binary state characteristic of the selected target by sensing means, storing the sensed binary state of the selected target, repeating the process for each digit of the binary code of the target, comparing the sensed (characteristic) and stored multiple digit code to a record of the binary characteristics of all of the targets to find a correlation between the sensed and stored binary code characteristic of the selected target and (a) the correlated characteristic of said record, and thereby securing identification of the selected target as the target to which the correlated recorded binary characteristic had been assigned.

4,243,973

HOME INTEGRATED SIGNAL SYSTEM

David H. Sandidge, Midland, Tex., assignor to Gordon B. Arnold, Midland, Tex., a part interest

Filed Mar. 27, 1979, Ser. No. 24,326
Int. Cl.³ H04Q *9/16*; H04M *11/00*
U.S. Cl. 340—148 **9 Claims**



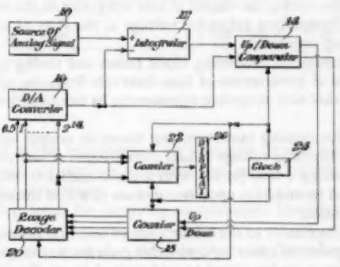
1. A system for producing an audible output upon the occurrence of certain events, comprising:
- first input means for providing a first input signal upon the occurrence of a first event;
- second input means for providing a second input signal upon the occurrence of a second event;
- coordinating circuit means connected to said first input means and said second input means for receiving said first and second input signals and producing first and second control signals respectively in response thereto;
- a first output means controlled by said coordinating circuit means for providing an audible signal in respone to one of said control signals;
- a second output means which is switched between a first, energized state and a second, deenergized state in response to one of said control signals;
- a third output means comprising a muting circuit for reducing the volume of competing sounds in response to one of said control signals; and
- a fourth output means comprising at least one normally energized electrical socket and further wherein said coordinating circuit means includes an oscillator circuit means for periodically interrupting the electrical supply to said socket for producing periodic energization of any load device connected to said socket.

4,243,974

WIDE DYNAMIC RANGE ANALOG TO DIGITAL CONVERTER

Rodney L. Mack, Los Gatos, Calif., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 24, 1978, Ser. No. 880,947
Int. Cl.³ H03K *13/02*
U.S. Cl. 340—347 NT **8 Claims**

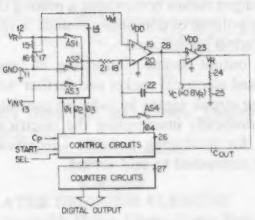


1. A method of geometrically converting an input analog signal to an output signal comprising the steps of:
- integrating said input signal in a first sense to provide an integrating signal,
- simultaneously therewith integrating a reference signal in a second sense opposite said first sense to reduce the amplitude of said integrated signal,
- periodically comparing the amplitudes of said integrated and reference signals,
- geometrically adjusting a digital signal according to each comparison,
- converting each said adjusted digital signal to analog form to provide said reference signal, and
- totalizing, over a predetermined measuring interval, the values of each said adjusted digital signal at the time of each comparison, thus to provide said output digital signal.

4,243,975
ANALOG-TO-DIGITAL CONVERTER

Eiji Masuda, Kawasaki, and Yasoji Suzuki, Ayase, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 25, 1978, Ser. No. 945,641
Claims priority, application Japan, Sep. 30, 1977, 52/117533
Int. Cl.[2] H03K *13/20*
U.S. Cl. 340—347 NT **8 Claims**



1. An analog-to-digital converter comprising:

an integrator having first and second inputs and powered from first and second potentials for integrating a difference between input voltages applied to said first and second inputs, said first input being supplied with a medium voltage between a first reference voltage and a second reference voltage of which the magnitude is larger than the first reference voltage;

a comparator powered from said first and second potentials for comparing the output voltage of said integrator with a comparison reference voltage, the magnitude of the comparison reference voltage ranging between said first and second potentials;

switching means connected to said second input of said integrator and selectively applying said first reference voltage, said second reference voltage, and an unknown analog signal to said second input of said integrator;

means for setting the output of said integrator to the level of said comparison reference voltage at the start of an integrating operation;

clock means for producing clock pulses and timing control pulses at predetermined time intervals from the point of time that said integrator commences its integration operation;

means for causing said switching means to couple said second reference voltage to said second input of said integrator during a first period with a given duration, said first period terminating upon occurrence of a first timing control pulse;

means responsive to the occurrence of said first timing control pulse to cause said switching means to couple said unknown analog signal to said second input of said integrator during a second period, said second period terminating when the output voltage of said integrator reaches said comparison reference voltage when said unknown analog signal is smaller in magnitude than said first reference voltage and upon occurrence of a second timing control pulse when said unknown analog signal is larger in magnitude than said first reference voltage;

means responsive to the occurrence of said second timing control pulse to cause said switching means to couple said first reference voltage to said second input of said integrator during a third period, said third period terminating when the output voltage of said integrator equals said comparison reference level;

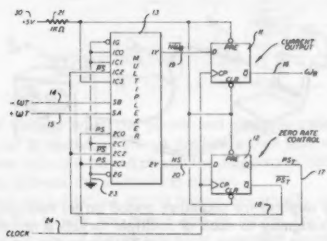
first counting means for counting the number of clock pulses occurring during said third period to provide a digital value corresponding to said unknown analog signal; and

second counting means for counting, when said unknown analog signal is smaller than the first reference voltage, the clock pulses occurring during a time interval in said second period from the time the output voltage of said integrator reaches said comparison reference voltage level to the time said second timing control pulse occurs to provide a digital value corresponding to the difference between said unknown analog signal and said first reference voltage.

4,243,976
TERNARY TO BINARY CONVERTER

Richard C. Warner, Morris Plains, and Donald J. Weber, North Caldwell, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Mar. 12, 1979, Ser. No. 19,545
Int. Cl.[2] H03K *13/24*
U.S. Cl. 340—347 DD **5 Claims**



1. A circuit for converting ternary information coded as first and second binary input signals in which a first binary state on one signal and second state on the other signal represent no input, a first binary state on the one and a first binary state on the other represent a positive input and second binary state on one and a second binary state on the other a negative input, into an output signal which, when alternating between two binary states, represents no input, when at a first binary state represents a positive input and when at a second binary state represents a negative input, comprising:

(a) means generating a clock signal synchronous with said first and second input signals;

(b) a multiplexer having as first and second inputs said first and second binary input signals, and providing said first and second signals to first and second outputs, said multiplexer also having control inputs operative to selectively couple said first and second inputs to said first and second outputs;

(c) a first D-type flip flop having said clock signal as a clock input and said first output as a data input and providing said output signal at its output; and

(d) a second D-type flip flop having said clock signal as a clock input and said second output as a data input and providing its outputs to said control inputs of said multiplexer.

4,243,977
DELTA SIGMA TO PCM CONVERTER

John D. Everard, Ipswich, England, assignor to The Post Office, London, England

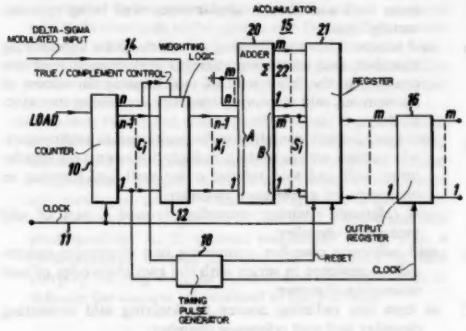
Filed Jan. 31, 1978, Ser. No. 873,972
Claims priority, application United Kingdom, Feb. 7, 1977, 5014/77
Int. Cl.[2] H04L *3/00*
U.S. Cl. 340—347 DD **18 Claims**

1. A converter for converting a supplied delta sigma modulated signal to a pulse code modulated signal comprising:

an n bit counter connected to count supplied clock pulses and to supply n binary-valued output bits representing the number of clock pulses counted during a predetermined time interval,

a true/complement, zero one logic element connected for

logically operating on the output bits of the counter in accordance with the pulse density modulation input to produce output samples weighted in accordance with the instantaneous contents of the counter, and



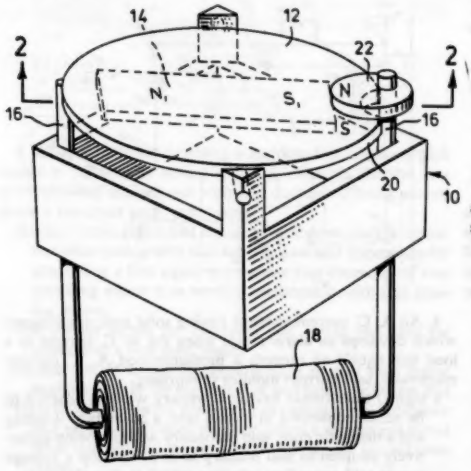
an m bit accumulator connected for accumulating said samples over a predetermined time interval to produce pulse code modulated signal samples corresponding to the supplied delta sigma modulated signal.

4,243,978

DISPLAY OR INDICATING DEVICE WITH MAGNETIC STOP

Donald Winrow, Weston, Canada, assignor to Ferranti-Packard Limited, Mississauga, Canada

Filed Oct. 5, 1979, Ser. No. 82,067
Int. Cl.³ G08B 5/24
U.S. Cl. 340—373 **4 Claims**



1. In an electronic display or indicating element, wherein a rotatably mounted disc is designed to provide visually contrasting surfaces on opposite sides, means mechanically limiting the rotation of the disc between two limiting positions $>90°$ and $<180°$ apart, in which limiting positions, the respective contrasting surfaces are displayed in a viewing direction, a first permanent magnet mounted for rotation with said element, arranged to produce a field having a component transverse to the rotational axis of said disc, at least one reversibly magnetizable pole piece and energizing means therefor, exterior to said disc, designed and connected to provide a first exterior magnetic field that in the absence of a second exterior magnetic field, each reversal of energization of said pole piece would rotate said permanent magnet and said disc from one limiting position to the other,

a second permanent magnet, of less magnetic field strength than that associated with said at least one pole piece, and mounted adjacent thereto,

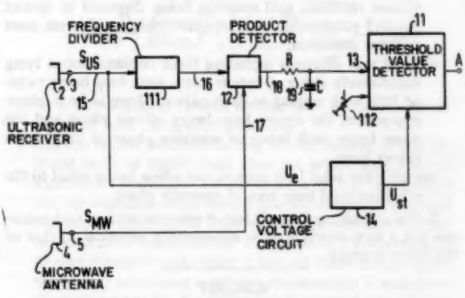
said second permanent magnet being designed and located relative to the locus of said first magnet during rotation of said disc to produce with said pole piece, in either magnetization, a magnetically stable position for said rotatable disc spaced by a small angle from the mechanical limiting position toward the other limiting position, whereby upon reversal of said pole piece magnetization, said disc is attracted from its former magnetically stable position toward the other magnetically stable position.

4,243,979

BURGLAR ALARM SECURITY CIRCUIT ARRANGEMENT

Peter Kleinschmidt, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 7, 1977, Ser. No. 858,156
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1976, 2656399
Int. Cl.² G08B 13/16, 13/18
U.S. Cl. 340—554 **5 Claims**



1. A circuit arrangement for a security device, which circuit arrangement receives ultrasonic and radio Doppler-frequency signals, comprising:

a first input for receiving an ultrasonic Doppler-frequency signal;

a second input for receiving a radio Doppler-frequency signal;

a frequency converter connected to one of said inputs for normalizing the frequency of the respective received signal to the frequency of the other received signal;

a product detector connected to said frequency converter and to the other of said inputs for providing the difference frequency of the signals applied thereto;

a low pass filter connected to said product detector and having a frequency-dependent attenuation characteristic;

a threshold value detector connected to said low pass filter for providing output signals in response to signals above a threshold value; and

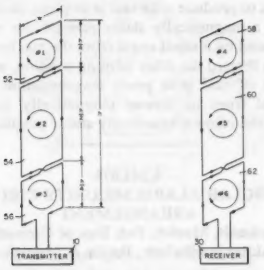
a control voltage circuit connected to one of said inputs and to said threshold value detector to derive a control signal having a frequency which is dependent upon the frequency received at said one input,

said threshold value detector including means responsive to said control voltage signal to adjust the threshold value in accordance with the frequency-dependent attenuation characteristics of said low pass filter.

4,243,980
ANTENNA SYSTEM FOR ELECTRONIC SECURITY INSTALLATIONS

George J. Lichtblau, 13 Tannery Hill Rd., Ridgefield, Conn. 06877

Filed Feb. 17, 1978, Ser. No. 878,753
Int. Cl.[3] G08B *13/24*
U.S. Cl. 340—572 7 Claims



4. An antenna system for use in an electronic security system for detection of unauthorized removal of items containing a resonant tag circuit, said antenna system comprising:

a transmiting antenna coupled to the security system transmitter and a receiving antenna coupled to the security system receiver, said antennas being disposed in spaced parallel relationship and between which said items must pass for detection;

each of said antennas including three coplanar loops lying successively along an antenna axis, each loop being twisted 180° with respect to each adjacent loop to be in phase opposition, the center loop being of one phase and the outer loops each being of opposite phase to that of the center loop;

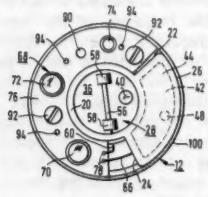
the effective total loop area of one phase being equal to the effective total loop area of opposite phase.

7. The antenna system of claim 4 wherein each of said antennas has a loop configuration substantially identical to that of the other antenna.

4,243,981
IONIZATION FIRE-SIGNAL DEVICE

Hartwig Beyersdorf, Konsulweg 29, D-2409 Scharbeutz, Fed. Rep. of Germany

Filed Nov. 17, 1978, Ser. No. 961,642
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1977, 2752690
Int. Cl.[2] G08B *17/10*
U.S. Cl. 340—629 34 Claims



1. An ionization fire-signal device, comprising:

a housing including an axially-extending tubular outer wall and a transversely-extending front wall, the axial dimension of said housing being less than the transverse dimension thereof;

an insulator positioned inside said housing and including a tubular inner wall positioned coaxially relative to said tubular outer wall;

said housing including a concentric section between said tubular inner wall and said tubular outer wall;

the outer transverse dimension of said tubular inner wall being less than the inner transverse dimension of said tubular outer wall, and the axial dimension of said tubular inner wall and of said tubular outer wall being approximately equal;

said tubular inner wall forming an enclosure for a measuring chamber, said measuring chamber including at least one opening in the front wall of said housing for access of ambient air, said measuring chamber containing two electrodes;

two spaced-apart insulating walls positioned in said concentric section and extending radially between said tubular inner wall and said tubular outer wall and forming an enclosure for a reference chamber;

said reference chamber extending around a part of said measuring chamber;

said reference chamber containing two electrodes electrically connected in series with the two electrodes of said measuring chamber;

at least one radiation source for ionizing said measuring chamber and said reference chamber;

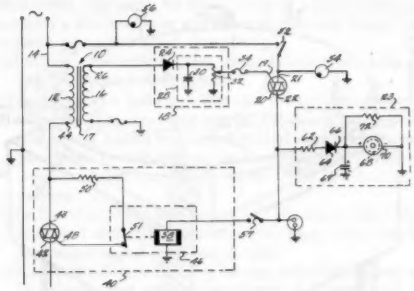
an electrical alarm signal circuit electrically connected to the electrodes of said measuring and reference chambers; and

the circuit elements of said signal circuit being disposed in said concentric section between said tubular inner wall and said tubular outer wall, and insulated from said reference chamber by said insulating walls.

4,243,982
CURRENT MONITOR

John K. Yarbrough, Rte. 2, Box 79, Indianola, Miss. 38751

Filed Feb. 26, 1979, Ser. No. 15,432
Int. Cl.[3] H02H *3/10*
U.S. Cl. 340—664 5 Claims



1. An A. C. current monitor having solid state components which develops an alarm signal when the A. C. current in a load line equals or exceeds a predetermined A. C. current magnitude, said current monitor comprising:

a high Q transformer having a primary winding adapted to be series connected in a load line, a secondary winding and a magnetic core, said secondary winding being inductively coupled to said primary so as to develop a voltage across said secondary winding which is directly proportional to the current through said primary winding;

a triac switch including a gate and two main terminals, said triac switch being automatically turned on and off by a voltage applied at said gate, said switch being automatically turned on when the magnitude of said voltage exceeds a predetermined value, said switch being automatically turned off when the magnitude of said voltage is less than said predetermined value;

means for developing a gate voltage, said gate voltage including a D. C. component proportional to the magnitude of said secondary voltage, said D. C. component being less

than said predetermined voltage value by a predetermined voltage amount when the magnitude of said A. C. current equals said predetermined A. C. current magnitude, said gate voltage being applied at said gate;

first rectifier means for rectifying the current through said switch; and

alarm means, series connected to said triac switch at one of said main terminals and responsive to the rectified current through said switch, for emitting an audible alarm;

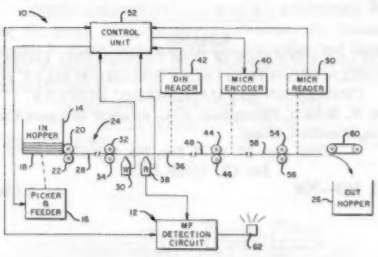
said voltage developing means including second rectifier means for rectifying said secondary voltage, resistor means and capacitor means;

said resistor means and said capacitor means together forming RC network means for periodically and automatically turning said switching means on and off so that said alarm means emits a chirping sound at a rate equal to the rate of said turning on and off when the magnitude of the difference between the magnitude of said A. C. current and said predetermined A. C. current magnitude is less than a predetermined current amount, the frequency of said chirping varying with the value of said difference so as to indicate the amount of overload in the load line.

4,243,983
METHOD AND APPARATUS FOR DETECTING THE MULTIPLE FEEDING OF DOCUMENTS

Arvind C. Vyas, Waterloo, Canada, assignor to NCR Canada Ltd. - NCR Canada Ltee, Missisauga, Canada

Filed Aug. 9, 1979, Ser. No. 65,384
Int. Cl.³ G08B *21/00*; B65H *7/12*
U.S. Cl. 340—674 **16 Claims**



1. An apparatus for detecting a multiple-feed situation with regard to documents having encoding arranged thereon in a predetermined manner and with said documents being moved along a transport path, comprising:

sensing means positioned along said transport path in operative relationship with said encoding on said documents for generating a first signal in response to a character of said encoding which is in moving relationship with said sensing means;

first circuit means for receiving said signal and also for generating a first time frame;

second circuit means for generating a second time frame beginning upon the expiration of said first time frame; and

third circuit means for generating an output signal indicative of a said multiple-feed situation when a subsequent signal from said sensing means occurs during said second time frame.

13. A method for detecting a multiple-feed situation with regard to documents being moved along a transport path, said documents having encoding arranged thereon in a predetermined manner with adjacent characters thereof having a spacing therebetween; said method comprising the steps of:

(a) generating a first signal in response to a character of said encoding as a said document is moved in operative relationship with a means for sensing said encoding;

(b) generating a first time frame in response to said first signal, with said first time frame bearing a relationship to the times that characters of said encoding are in operative relationship with said sensing means;

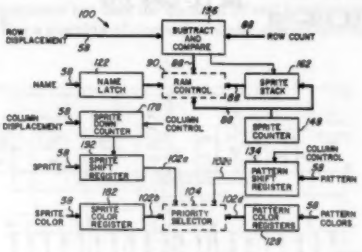
(c) generating a second time frame beginning upon the completion of said first time frame, with said second time frame bearing a relationship to the times that the spaces between adjacent characters of said encoding are in operative relationship with said sensing means;

(d) generating an output signal indicative of a said multiple-feed situation when a subsequent signal from said sensing means occurs during said second time frame.

4,243,984
VIDEO DISPLAY PROCESSOR

David A. Ackley, Stafford; Gerald D. Rogers, Sugarland; Peter H. Macourek, Needville; Karl M. Guttag, and Ki Suk Chang, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 8, 1979, Ser. No. 18,540
Int. Cl.³ G06F *3/153*
U.S. Cl. 340—703 **8 Claims**



1. In a video display system for use with a raster-scanned video display unit, the system including:

a random access memory having stored therein a first ordered array of digital code elements which map a set of video color codes into the M columns of N rows of video display elements comprising a first video image; a second ordered array of digital code elements which map said set of video color codes into the S columns of T rows of video display elements comprising a second video image; and a third array containing a column displacement U and a row displacement V for the display of the second video image relative to the first video image, where $1 \leqq S \leqq M$, $1 \leqq T \leqq N$, $1 \leqq U \leqq M$ and $1 \leqq V \leqq N$;

a video display processor for providing a composite video signal for application to the video display unit, whereby the first video image may be displayed with the second video image superimposed thereon at said column and row displacements, the video display processor comprising:

sequence control means providing a cyclic column count X and a cyclic row count Y indicative of the time sequential position of the raster scan;

memory control means for selectively retrieving from the random access memory, portions of the first, second and third arrays;

overlay control means, cooperating with the memory control means in synchronization with the column and row counts, for providing a first pattern signal comprising the digital code element in the first array which maps the video display element in the column X of the row Y of the first video image when $1 \leqq X \leqq M$ and $1 \leqq Y \leqq N$, and for providing a second pattern signal comprising the digital code element in the second array which maps the video display element in the column $(X-U+1)$ of the row $(Y-B+1)$ of the second video image when $U \leqq X < (U+S)$ and $(V \leqq Y < (V+T)$;

priority selector means connected to the overlay control means for receiving the first and second pattern signals,

selecting the second pattern signal in response to receiving the second pattern signal, selecting the first pattern signal when the second pattern signal is not selected, and providing a video control signal comprised of the video color codes mapped by the digital code elements comprising the selected pattern signal; and

composite video generating means, cooperating with the priority selector means in synchronization with the column and row counts, for generating said composite video signal in accordance with the video color codes of the video control signal.

4,243,985

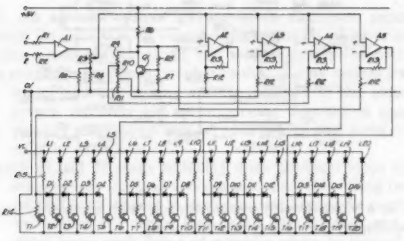
ANALOGUE VOLTAGE INDICATOR WITH SEQUENCE OF LIGHT EMITTING DIODES

Ian H. Quayle, Needingworth, England, assignor to Chronolog Systems Limited, London, England

Filed May 4, 1978, Ser. No. 902,663

Int. Cl.[2] G06F *3/14*

U.S. Cl. 340—753 **8 Claims**



1. Analogue voltage display means comprising:

an analogue voltage input for receipt of an analogue voltage signal to be displayed;

a plurality of sets of light emitting diodes, said sets being together arranged to provide a display of a single sequence of light emitting diodes;

a plurality of signal offsetting elements, there being one such element for each set of light emitting diodes, each signal offsetting element being connected with said input to receive the analogue voltage signal;

offset voltage means supplying a different offset voltage to each signal offsetting element whereby the elements provide, over respective contiguous ranges of the analogue voltage signal, respective offset analogue voltage signals which are indicative of the analogue voltage signal to be displayed and which vary within voltage ranges which are similar as between the signal offsetting elements; and

a plurality of control means, there being one such control means for each set of light emitting diodes, each control means being connected to receive the offset voltage signal from the corresponding signal offsetting element and comprising reference means which defines levels of the said offset voltage signal corresponding respectively with the light emitting diodes of the associated set and a semiconductor switch for each light emitting diode of the associated set, each semiconductor switch being actuable selectively to enable or inhibit current flow through the light emitting diode, the semiconductor switches for each set being respectively actuated as the corresponding offset analogue voltage signal reaches the levels defined for the respective light emitting diodes of the set, so that the light emitting diodes of the sequence are illuminated at unique levels of the analogue voltage signal to provide a visual indication thereof.

4,243,986

DISPLAY ARRANGEMENTS

Ralph D. Nixon, Braintree, England, assignor to English Electric Valve Company Limited, Chelmsford, England

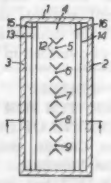
Filed Oct. 3, 1979, Ser. No. 81,386

Claims priority, application United Kingdom, Oct. 4, 1978, 39286/78

Int. Cl.[3] G08B *5/36*

U.S. Cl. 340—756 **6 Claims**

1. A display arrangement including an envelope having a pair of opposite display surfaces characterised in that the envelope is evacuated and the display surfaces are constituted by fluorescent screens, the envelope having an electron beam emissive cathode structure positioned between the two fluorescent screens and arranged to irradiate both screens with a flood beam of electrons, and a segmented mesh electrode structure mounted adjacent to each fluorescent screen so as to intercept the electrons from the cathode structure, the different segments of the electrode structure being selectively addressable to control passage of electrons through selected portions thereof.



4,243,987

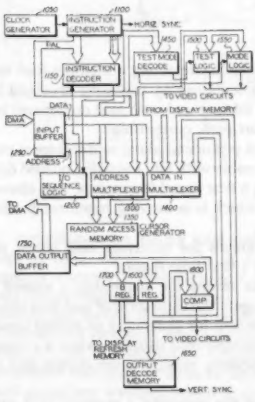
DISPLAY PROCESSOR FOR PRODUCING VIDEO SIGNALS FROM DIGITALLY ENCODED DATA TO CREATE AN ALPHANUMERIC DISPLAY

Thomas W. Bobick, Richardson, Tex., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 27, 1978, Ser. No. 919,652

Int. Cl.[3] G06F *3/14*

U.S. Cl. 340—799 **6 Claims**



1. A display processor for producing video display data to form video images of dot matrix text characters in a format that emulates a typewritten page of text, which comprises:

a display refresh memory for storing text character codes and text manipulative codes, said refresh memory including a plurality of random access memories arranged to store a number of eight-bit data words;

logic means for coordinating the addressing of said random access memories;

programmable read-only memories for modifying text character codes read out of said refresh memory and designating text manipulative codes read out of said refresh memory;

a high-speed text buffer for storing modified text character codes and text manipulative codes from said programmable read-only memories;

control means for operating said text buffer such that data is written into the text buffer during the first half of a character time, and data is read out during the last half of the character time;

a character generator for receiving text character codes and text manipulated codes read out of the display refresh memory and providing coded data words representative of portions of dot matrices for the coded text characters;

a video output register connected to the character generator for transforming the coded data words into serial data to be outputted in real time for display; and

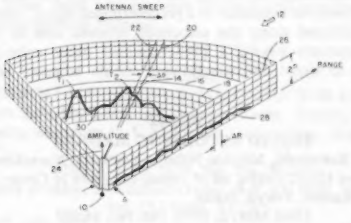
microprogrammed control logic operating on a repeating cycle of specified instruction steps for writing text character codes and text manipulative codes into the display refresh memory and reading the same out of the display refresh memory, and for generating output signals to coordinate the display of the serial data from the video output register.

4,243,988

MEANS FOR IMPROVING ANGULAR RESOLUTION OF INCOHERENT PULSE RADAR SYSTEMS

Eyung W. Kang, Margate; Ruy L. Brandao, Ft. Lauderdale; Jaromir R. Bares, Lighthouse Point, all of Fla., and Delmar V. Payne, Ferndale, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 1, 1979, Ser. No. 16,575
Int. Cl.³ G01S *13/00, 13/10*
U.S. Cl. 343—5 VQ **8 Claims**



1. Means for improving the angular target resolution of an incoherent pulse radar system wherein the antenna beam is scanned back and forth through a field of interest and wherein the radar return signals are converted into elements of digital data, and where-in said field of view is divided into lines of increasing range cells and lines of constant range cells, comprising:

means for generating first signals relating to the second derivatives of the elements of digital data corresponding to radar return signals from at least one line of constant range cells, each said first signal being associated with a particular range cell;

means for summing a plurality of said first signals associated with each particular range cell; and,

means for combining each sum of said first signals with an element of digital data corresponding to the same range cell to provide a new element of digital data, a plurality of said new elements corresponding to range cells in a line of constant range cells thereby exhibiting improved angular target resolution.

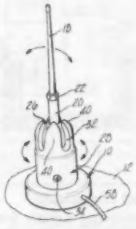
4,243,989

VEHICLE ANTENNA

Bert W. Piper, 36051 Goddard Rd., Romulus, Mich. 48174, assignor to Bert William Piper, Belleville, Mich.

Filed Oct. 29, 1979, Ser. No. 88,831
Int. Cl.³ H01Q *1/20, 1/32*
U.S. Cl. 343—715 **16 Claims**

1. A vehicle antenna comprising a base member adapted to be mounted on a support surface of a vehicle, said base member having an upwardly concave socket at its upper end defined generally by a segment of a hemisphere, an antenna rod having a generally spherical ball member fixedly attached to its lower end, said ball member having a diameter corresponding generally to the diameter of said hemisphere and being seated in said socket, a cap overlying said ball member and having an annular skirt extending downwardly past said socket, means connecting said cap with said base and permitting said cap to rotate in a horizontal plane around a vertical axis concentric with said ball, said cap having a central opening at its upper end through which the antenna rod extends, said opening having a transverse dimension less than the diameter of said hemisphere, said cap having a plurality of circumferentially spaced slots extending downwardly from the periphery of said opening to a level below the center of said ball member, said slots having a width sufficient to accommodate the portion of the antenna rod adjacent its connection with said ball member and means acting between said ball member and said seat for yieldably retaining the antenna rod in a position extending vertically upwardly from said base.

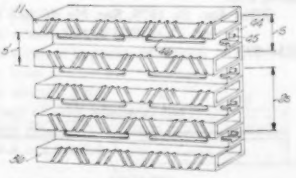


4,243,990

INTEGRATED MULTIBAND ARRAY ANTENNA

Jeffrey T. Nemit, Canoga Park; George A. Hockham, Valencia, and Ronald I. Wolfson, Northridge, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,548
Int. Cl.³ H01Q *13/10*
U.S. Cl. 343—771 **5 Claims**



1. An integrated multi-band antenna array comprising:

a first two-dimensional subarray comprising a plurality of first linear rectangular waveguide arrays each having a plurality of narrow wall slot radiators, said linear waveguide arrays being spaced between facing broad walls of adjacent ones of said linear waveguide arrays thereby generating a plurality of intervening spaces;

means defining a conductive walled continuous enclosure open substantially only toward the aperture of said array, within each of said intervening spaces;

a second two-dimensional subarray comprising a second

plurality of linear arrays, each within a corresponding one of said intervening spaces, the number of said second linear arrays being not greater than the number of said first linear arrays and said second linear arrays being of a type selected from a group comprising meander lines and square, coaxial line, longitudinally-slotted linear arrays;

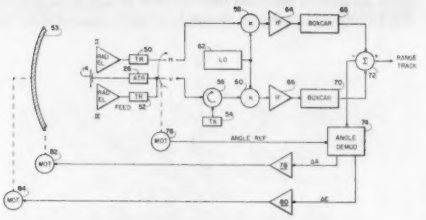
and first and second feed arrangements for independently feeding said first and second subarrays, respectively, according to separate corresponding excitation programs.

4,243,991

ANTENNA FEED FOR SCAN-WITH-COMPENSATION TRACKING

Elmer D. Woodward, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 30, 1978, Ser. No. 910,260
Int. Cl.[3] H01Q *3/10*
U.S. Cl. 343—777 19 Claims



1. An antenna feed comprising:

first means for receiving signals from a transmitter and for generating a single on-axis unmodulated transmit radar pencil beam therefrom; and

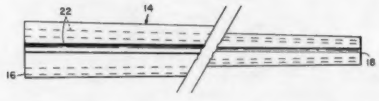
second means for receiving echo signals reflected by a target within said transmitted pencil beam, for forming first and second pencil beams squinted equally off-axis in opposite directions, and being operably coupled to said first means such that upon reception of echo signals from an off-axis target, said first pencil beam produces a first signal in said first means, said second pencil beam produces a second signal in said first means and said first and second signals are orthogonal.

4,243,992

METHOD AND APPARATUS FOR FABRICATING A WIDEBAND WHIP ANTENNA

Donald B. Forman, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 16, 1979, Ser. No. 30,187
Int. Cl.[3] G08B *13/00*
U.S. Cl. 343—873 9 Claims



1. A method of fabricating a highly flexible, low profile, wideband whip antenna comprising the steps of:

fabricating a solid rod of highly flexible material having a plurality of longitudinal open grooves spaced around its periphery;

inserting radiating elements into respective grooves on said rod of a size so as to be loosely positioned therein; and

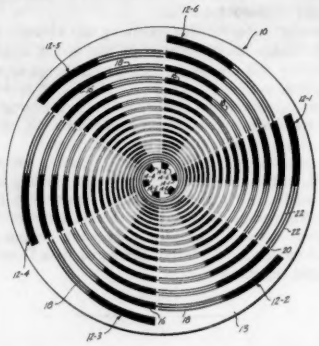
bonding an outer protective jacket to the periphery of said rod whereby the radiating elements are free to slide longitudinally within their respective grooves between the rod and jacket when the rod is bent.

4,243,993

BROADBAND CENTER-FED SPIRAL ANTENNA

Bernard J. Lamberty, and George S. Andrews, both of Kent, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 13, 1979, Ser. No. 93,183
Int. Cl.[3] H01Q *1/36*
U.S. Cl. 343—895 28 Claims



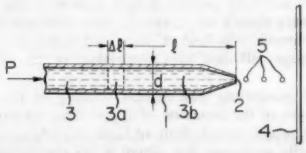
1. A spiral antenna comprising at least one electrically conductive antenna arm, each said antenna arm extending outwardly about an axis of rotation, each said antenna arm including at least one choke element serially disposed between adjoining innermost and outermost regions of said antenna arm, each said choke element corresponding to a section of transmission line and including a central conductive region extending between said adjoining innermost and outermost regions of said antenna arm, each said choke element including at least one outer conductive region that is electrically interconnected with said central conductive region and extends in spaced-apart relationship therewith, each said choke element being dimensioned for resonance at a predetermined signal frequency and positioned along the associated antenna arm to reflect signal currents having a predetermined phase relationship relative to signal currents flowing within adjacent antenna arms.

4,243,994

LIQUID RECORDING MEDIUM

Hajime Kobayashi, Mitaka; Noboru Koumura, Narashino, and Shigeru Ohno, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 16,985
Claims priority, application Japan, Mar. 3, 1978, 53-24627
Int. Cl.[3] G01D *15/18*
U.S. Cl. 346—140 R 11 Claims



1. Liquid recording medium for use in a recording method, in which the liquid recording medium is ejected from an orifice of a nozzle by the action of heat energy, and the thus ejected liquid recording medium is caused to impinge toward an image recording member in the form of droplets for image recording, said liquid recording medium comprising:

(a) recording agent which is a component to form a recorded image; and

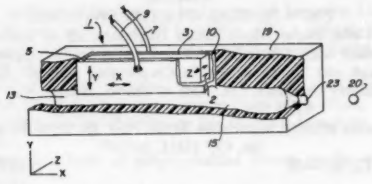
(b) carrier liquid to dissolve or disperse said recording agent, a difference ΔT between a decomposition temperature of a substance having the lowest decomposition temperature among the substances constituting the recording agent and a boiling point of said liquid recording medium, exclusive of said recording agent, being at least 30° C.

4,243,995

ENCAPSULATED PIEZOELECTRIC PRESSURE PULSE DROP EJECTOR APPARATUS

Allen T. Wright, Lewisville, and Kenneth H. Fischbeck, Dallas, both of Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 1, 1979, Ser. No. 44,800
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **2 Claims**



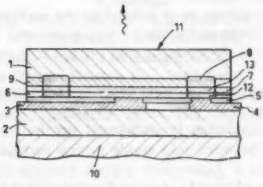
1. A pulsed liquid droplet ejecting apparatus wherein a substantially rectangular piezoelectric transducer is utilized in the in-plane extensional mode, comprising a piezoelectric transducer having conductive sidewalls connectable to a source of electrical voltage through electrical leads, a channel positioned to be acted upon by a first substantially linear edge of said piezoelectric transducer upon application of electrical voltage to said sidewalls to expel ink from an orifice, said piezoelectric transducer and said channel being encapsulated, and said piezoelectric transducer being positioned abaxially to said channel; characterized in that said piezoelectric transducer is at least partially coated with a material which will allow shear relief between said piezoelectric transducer and said encapsulating material.

4,243,996

ELECTROLUMINESCENT SEMICONDUCTOR DEVICE

Jacques Lebailly, Caen, and Jacques Varon, Troarn, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 18, 1979, Ser. No. 31,242
Claims priority, application France, Apr. 21, 1978, 78 11857
Int. Cl.³ H01L *33/00*
U.S. Cl. 357—17 **12 Claims**



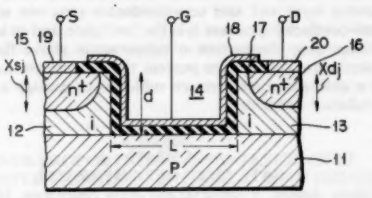
1. A semiconductor device for generating electromagnetic radiation, comprising a semiconductor body having successively at least a first semiconductor layer of a first conductivity type, a second electroluminescent semiconductor layer and a third semiconductor layer of the second opposite conductivity type, the first and the third semiconductor layer having a larger forbidden bandwidth than the second semiconductor layer, characterized in that the first semiconductor layer has a partially reflecting surface through which the radiation emanates, that the second layer shows a direct band structure and a compensation factor smaller than $\frac{1}{2}$, and has a thickness between 0.1 and 3 absorption lengths for the radiation, that the third semiconductor layer has a reflecting surface situated opposite to the said partially reflecting surface and having two contact pads on which electrodes are provided, a highly doped contact zone of the first conductivity type extending from one of the contact pads down to the first layer.

4,243,997

SEMICONDUCTOR DEVICE

Kenji Natori, Kamakura, and Fujio Masuoka, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 781,382, Mar. 25, 1977, abandoned. This application Oct. 30, 1978, Ser. No. 955,879
Claims priority, application Japan, Mar. 25, 1976, 51/31932; Mar. 25, 1976, 51/31933; Jul. 10, 1976, 51/81487
Int. Cl.³ H01L *27/78*
U.S. Cl. 357—23 **12 Claims**



1. A semiconductor device comprising a semiconductor substrate of one conductivity type, a source region and a drain region of opposite conductivity type separately provided on the semiconductor substrate to form a conductive channel therebetween, a U-shaped groove provided above said channel between the source and drain regions, said U-shaped groove having side walls of depth d and having a base of breadth L substantially parallel to the direction of said channel, said semiconductor device further having an insulating layer on said groove and a gate electrode installed above the channel on said insulating layer, wherein a depth X_{sj} of said source region is selected to be calculated by the following formula,

$$X_{sj} \leqq d - \sqrt{\frac{2\epsilon}{qN}} \left(\sqrt{|V_{SUB}| + V_B} - \sqrt{|V_{SUB}| + 2\phi_F} \right)$$

where
d=depth of groove
ϵ=dielectric coefficient of silicon
N=concentration of impurity of silicon
ϕF=Fermy level
V_B=built-in electric field
V_{SUB}=voltage of said substrate, and
q=elementary charge,

4,243,998

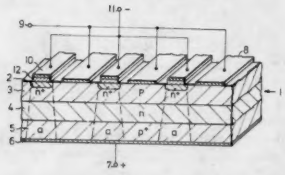
SAFETY CIRCUIT FOR A SEMICONDUCTOR ELEMENT

Heinrich Schlangenotto, Neu-Isenburg; Friedhelm Sawitzki, Frankfurt am Main, and Ronald Henson, Neu-Isenburg, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,326
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2757295
Int. Cl.³ H01L *23/56*
U.S. Cl. 357—28 **7 Claims**

1. A thermally protected semi-conductor element compris-

ing, a plurality of connected semi-conductor layers forming a semi-conductor structure having at least two surfaces, a metal contact layer for supplying current to said surfaces connected to each of said surfaces for establishing a "on" condition in said semi-conductor structure, and a positive temperature coefficient resistor layer directly connected to one of said surfaces and one of said metal contact layers, said positive temperature coefficient resistor layer disposed between said one surface and



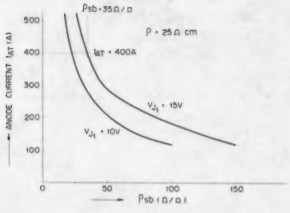
said one metal contact layer and made of a material having the characteristics of causing a relatively low voltage drop thereacross at temperatures below a critical temperature of said resistor layer and said semi-conductor structure when said semi-conductor structure is in the "on" state, and an increasing voltage drop thereacross at temperatures above the critical temperature sufficient to prevent the temperature to increase to a destruction temperature sufficient to damage said semi-conductor structure.

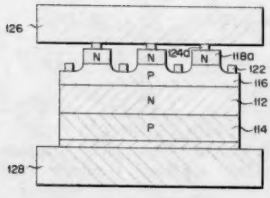
4,243,999

GATE TURN-OFF THYRISTOR

Makoto Azuma, Yokohama, and Akio Nakagawa, Hiratsuka, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation-in-part of Ser. No. 792,398, Apr. 29, 1977, abandoned. This application Jul. 16, 1979, Ser. No. 58,128
Claims priority, application Japan, Mar. 8, 1977, 52-24489
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 **8 Claims**





1. A gate turnoff thyristor which comprises a semiconductor body having at least four contiguous layers, namely, a first diffused layer of a first conductivity type, second layer lying contiguous to the first layer and having a second conductivity type, a third diffused layer lying contiguous to the second layer and having said first conductivity type, and a fourth diffused layer lying contiguous to the third layer and having said second conductivity type;

an anode electrode mounted on said first layer;

a gate electrode formed on said third layer; and

a cathode electrode deposited on said fourth layer, and in which the following two equations are satisfied:

$$\rho \cdot V_J / \rho_{sb} \geqq 10.5(\Omega\text{-}cm) \quad \text{and} \quad \rho_{sb} \leqq 35(\Omega/\ )$$

where:

ρ_{sb}=sheet resistance (Ω/) at the normal temperature of the third layer

V_J=backward withstanding voltage (V) at a PN junction between the third and fourth layers

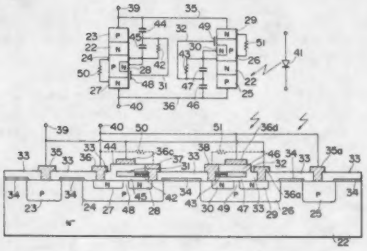
ρ=specific resistance (Ω-cm) of the second layer.

4,244,000

PNPN SEMICONDUCTOR SWITCHES

Jun Ueda; Haruo Mori; Kazuo Hagimura, all of Tokyo, and Kotaro Kato, Chofu, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Oki Electric Industry Company, Ltd., both of Tokyo, Japan

Filed Nov. 20, 1979, Ser. No. 96,165
Claims priority, application Japan, Nov. 28, 1978, 53/146058
Int. Cl.³ H01L *29/747*
U.S. Cl. 357—39 **10 Claims**



1. A PNPN semiconductor switch comprising:

(a) an N conductivity type semiconductor substrate,

(b) a P conductivity type P gate region,

(c) a P conductivity type anode region formed in said semiconductor substrate at a position which is a predetermined distance from said P gate region,

(d) an N conductivity type cathode region formed in said P gate region,

(e) an N conductivity type drain region formed in said P gate region at a position which is spaced from said N conductivity type cathode region,

(f) a first insulating layer formed on the surface of said substrate between said cathode region and said drain region,

(g) a first gate electrode formed on said first gate insulating layer,

(h) a second gate insulating layer formed on said first gate electrode,

(i) a third insulating layer formed on the surface of said substrate between said anode region and said P gate region,

(j) a P gate electrode electrically connected to said drain region and said P gate region,

(k) a resistance region connected between said first gate electrode and said P gate electrode,

(l) a second gate electrode mounted on said second gate insulating layer,

(m) a cathode electrode electrically connected to said cathode region, and

(n) an anode electrode electrically connected to said anode region.

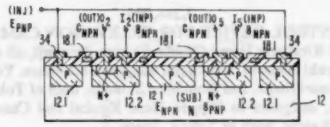
4,244,001
FABRICATION OF AN INTEGRATED INJECTION LOGIC DEVICE WITH NARROW BASEWIDTH

Alfred C. Ipri, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 914,901, Jun. 12, 1978. This application Sep. 28, 1979, Ser. No. 80,101

Int. Cl.³ H01L *27/04, 21/22*

U.S. Cl. 357—44 **4 Claims**



1. A method of fabricating an Integrated Injection Logic device having a lateral PNP transistor with a narrow base width region and a vertical NPN transistor, comprising the steps of:

providing a semiconductor body of a given conductivity type, the body having a common boundary surface;

depositing a layer of oxide on the common boundary surface;

depositing a layer of polycrystalline silicon on the oxide layer;

depositing a layer of apertured masking material on the polycrystalline silicon layer;

etching the unmasked portions of the polycrystalline silicon layer to expose unetched edges of polycrystalline silicon under the masking layer;

doping the exposed edges of the unetched polycrystalline silicon layer to form a narrow line of doped polycrystalline silicon in the polycrystalline silicon layer, the narrow doped line defining the limits of the width of the base region of the PNP transistor;

modifying regions of the semiconductor body to an opposite conductivity type to form the emitter and collector regions of the PNP transistor, the collector of the PNP transistor also functioning as the base region of the NPN transistor;

depositing a layer of apertured masking material on the layer of oxide, the exposed portions thereof aligned with portions of the collector region of the PNP transistor;

modifying the exposed portion of the collector region of the PNP transistor to the given conductivity type to form the collector region of the NPN transistor, the remaining portion of the body of semiconductor material being common to the base region of the PNP transistor and the emitter region of the NPN transistor; and

providing each region with respective ohmic contact.

4,244,002
SEMICONDUCTOR DEVICE HAVING BUMP TERMINAL ELECTRODES

Susumu Sato, and Hideo Tsunemitsu, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

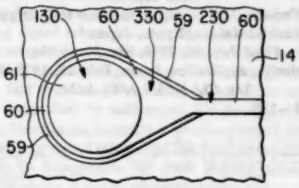
Filed Oct. 18, 1978, Ser. No. 952,543

Claims priority, application Japan, Oct. 19, 1977, 52/126318

Int. Cl.³ H01L *23/48*

U.S. Cl. 357—68 **10 Claims**

1. A semiconductor device comprising a semiconductor substrate; an insulating film covering at least a part of a major surface of said semiconductor substrate; a bump terminal electrode provided on said insulating film and having an edge; a wiring layer connected to a region formed in said semiconductor substrate and extending on said insulating film, said wiring layer having a width smaller than the length of said edge of said bump terminal electrode; a conductive connecting layer, provided on said insulating film, and having one end connected to an end of said wiring layer and the other end connected to said edge of said bump terminal electrode, said other end having a width larger than said width of said wiring layer, said



connecting layer preventing breaking of said semiconductor substrate due to thermal pressure gang bonding applied to said bump terminal electrode.

4,244,003
CHARGE PROPORTIONAL OPTO-ELECTRONIC CONVERTER PROVIDING ENHANCED BLUE COLOR SIGNAL

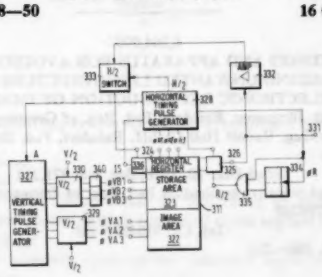
Dieter Poetsch, Ober-Ramstadt, and Dietmar Gornott, Darmstadt-Arheiligen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 29, 1978, Ser. No. 891,457

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1977, 2715097

Int. Cl.³ H04N *9/09, 9/11*

U.S. Cl. 358—50 **16 Claims**



2. In the color television imaging method in which several primary color signals are formed with the use of at least two sets of opto-electronic converters by combining, within sequential scanning intervals the charges which develop in proportion to the quantity of light incident upon the converters, the improvement comprising the steps of:

providing a plurality of row-shaped opto-electronic converters, one row-shaped converter providing charges for each primary color signal desired,

periodically scanning each row-shaped converter to detect the charges and thereby develop each primary color signal from the charges, and

combining the blue primary color charges over a time period greater than the scanning period for the other primary color signals.

4,244,004

METHOD FOR ANALOG-DIGITAL CONVERSION, AND A PICTURE REPRODUCTION METHOD EMPLOYING THE SAME

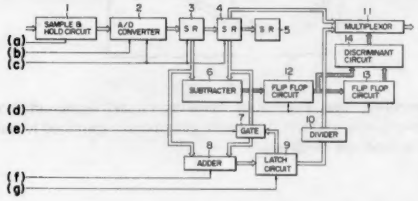
Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Jan. 29, 1979, Ser. No. 6,994

Claims priority, application Japan, Feb. 21, 1978, 53-18679

Int. Cl.³ H04N *1/40, 5/14*

U.S. Cl. 358—138 **8 Claims**



5. A method of picture reproduction, comprising scanning an original picture and producing an analog original picture signal; wherein said analog original picture signal is converted into a digital original picture signal; wherein the digital original picture signal is converted into an analog reproduction picture signal which is used to produce a reproduction picture; wherein the digital original picture signal is produced at a certain sampling frequency rate; and wherein values representative of the analog original picture signal are produced at a frequency rate which is a multiple n of the sampling frequency rate, said digital original picture signal being obtained by using n consecutively-produced ones of these representative values: characterized in that said digital original picture signal is produced from three input values obtained from the consecutively-produced representative values, said digital original picture signal being produced from the second one of the three input values if said second one is maximum or the minimum of said three input values, otherwise, said digital original picture signal being produced from the average of the three input values.

4,244,005

METHOD AND APPARATUS FOR AVOIDING OR MINIMIZING UNWANTED LINE-STRUCTURES IN THE ELECTRONIC REPRODUCTION OF IMAGES

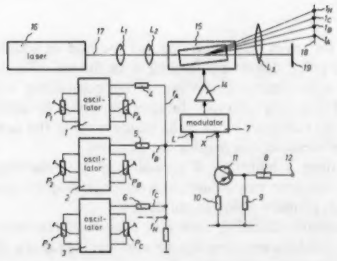
Heinrich Jürgensen, Raisdorf, Fed. Rep. of Germany, assignor to Dr.-Ing. Rudolf Hell GmbH, Raisdorf, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,211

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1977, 2758305

Int. Cl.³ H04N *3/00*

U.S. Cl. 358—201 **9 Claims**



1. A method of avoiding visible lines between the scan lines of an image produced by line by line scanning with a beam of a monochromatic light source comprising, positioning an acousto-optic modulator in the path of the beam, driving the acousto-optic modulator with a mixture of a plurality of selected discrete individual frequencies to split the beam into a plurality of sub-beams of essentially the same intensity which together determine the width of a scan line, and modulating the intensity of the light forming the scan line.

4,244,006

CONTROL DEVICE FOR TELEVISION CAMERA

Sigeyosi Kitahara; Isamu Okada; Shigeru Jumonji, all of Tokyo; Takayuki Nemoto, Kunitachi; Shigeru Yoshimura, Yokohama; Tsunenori Soma, and Nobuhiko Shinoda, both of Tokyo, all of Japan, assignors to Nippon Hoso Kyokai and Canon Kabushiki Kaisha, both of Tokyo, Japan

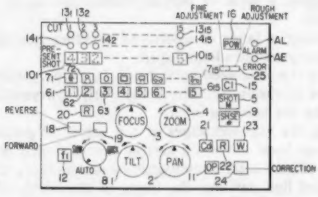
Continuation of Ser. No. 706,486, Jul. 19, 1976, Pat. No. 4,123,782. This application Aug. 23, 1978, Ser. No. 936,583

Claims priority, application Japan, Jul. 18, 1975, 50-88116; Jul. 18, 1975, 50-88117; Jul. 18, 1975, 50-88118; Jul. 18, 1975, 50-88119; Jul. 18, 1975, 50-88120; Jul. 18, 1975, 50-88121

The portion of the term of this patent subsequent to Oct. 31, 1995, has been disclaimed.

Int. Cl.³ H04N *5/30, 5/22, 5/24*

U.S. Cl. 358—210 **10 Claims**



1. A control device for a camera having control elements for taking a plurality of scenes successively, comprising in combination:

(a) control information setting means for setting control quantities for the control elements of the camera;

(b) conversion means to convert the control quantities set by said setting means into electrical signals;

(c) a memory circuit having a plurality of memory portions;

(d) a designation signal forming circuit for forming a designation signal, a predetermined memory portion being designated on the basis of the value of said signal;

(e) a manually operated member to determine the value of said designation signal;

(f) a signal transmission circuit connected to said memory circuit and to said conversion means, said circuit transmitting an electrical signal from said conversion means to the memory portion designated by the designation signal;

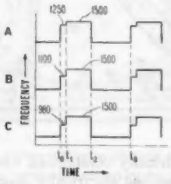
(g) a read-out circuit for selectively reading out the electrical signals stored in the memory portions, said circuit producing an electrical signal output stored in the memory portion of the memory circuit designated by said designation signal, said read-out circuit comprising a sequence designation circuit to designate the sequence of read-out from said memory portions, and said sequence designation circuit including a sequence memory circuit having a plurality of sequence memory portions, each sequence memory portion storing therein a designation signal, and a forwarding circuit which sequentially designates said sequence memory portion and transmits the designation signal stored in the designated sequence memory portion to said read-out circuit; and

(h) a drive circuit to control the control elements of the camera in response to the electrical signals from said read-out circuit.

4,244,007
FACSIMILE RECEIVER SIGNALLING

John M. Vandling, Pleasantville, N.Y., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 617,104, Sep. 26, 1975, Pat. No. 4,079,425. This application Mar. 13, 1978, Ser. No. 886,135
Int. Cl.³ H04N *1/32, 1/34*
U.S. Cl. 358—257 19 Claims



1. A receiving facsimile unit adapted to reproduce dark-light variations in a copy representing a facsimile of a document located at a facsimile transmitter capable of transmitting in one of a plurality of modes comprising:

writing means for reproducing dark-light variations in a document;

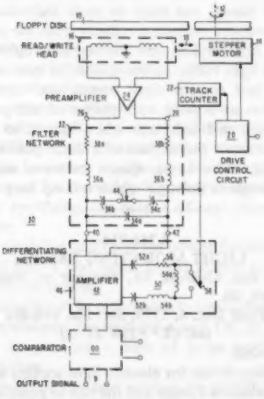
demodulating means for demodulating received signals including signals repesenting said dark-light variations, said detector means being coupled to said writing means; and

modulator means for generating a transmission signal representing a capability of said receiving unit to operate in at least one of said modes, said signal sequentially varying between a first frequency during a first time interval and a second frequency during a second time interval so as to produce a frequency transition defining said mode capability.

4,244,008
READ BACK COMPENSATION CIRCUIT FOR A MAGNETIC RECORDING DEVICE

Dewilton R. Holt, El Toro, Calif., assignor to Siemens Corporation, Iselin, N.J.

Filed Jul. 30, 1979, Ser. No. 61,849
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—45 11 Claims



1. A read back compensation circuit for a magnetic recording device comprising:

(a) a circuit input having applied thereto a reading signal from a read head, said read head being determined for reading data from a magnetic recording medium;

(b) a filter network operationally connected to said circuit input, said filter network having a damping factor and a resonance frequency;

(c) means for determining the data speed of the data in the reading signal relative to a predetermined value;

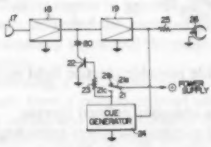
(d) switching means connected to said filter network, said switching means being arranged as to change the damping factor and resonance frequency of said filter network and being controlled by said means for determining the data speed, thereby to increase a predetermined harmonic of said reading signal relative to the fundamental thereof and thereby to compensate for peak shifting when said data speed is above a predetermined value; and

(e) a processing network connected to the output of the filter network for providing a data output signal.

4,244,009
CUE RECORDING SYSTEM FOR MAGNETIC RECORDER

Ken Satoh, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Division of Ser. No. 774,697, Mar. 4, 1977, abandoned. This application Jun. 2, 1978, Ser. No. 911,935
Claims priority, application Japan, Mar. 10, 1976, 51/26413; Mar. 10, 1976, 51/26414
Int. Cl.³ G11B *19/02*
U.S. Cl. 360—71 4 Claims



1. A cue recording system for magnetic recorders, comprising:

a microphone;

a tape head;

acoustical input circuit means for generating an electrical signal representative of an acoustical signal applied to said microphone;

means for normally applying said electrical signal to said tape head;

cue generating circuit means for applying a cue signal to said tape head while said acoustical input circuit generates said electrical signal and for preventing said electrical signal from being applied to said tape head when said cue signal is applied to said tape head so that only said cue signal is applied to said tape head.

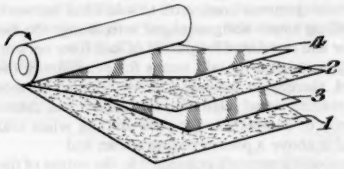
4,244,010
AC ELECTROLYTIC MOTOR START CAPACITOR

David A. Lintott, Clinton, Tenn., assignor to Sprague Electric Company, North Adams, Mass.

Filed Nov. 16, 1978, Ser. No. 961,327
Int. Cl.³ H01G *9/00;* B01J *17/00*
U.S. Cl. 361—433 6 Claims

1. In the manufacture of a wound foil AC electrolytic motor-start capacitor section comprising anodized foil electrode strips and spacer strips wherein the improvement comprises winding said spacer strips on a mandrel for a few turns, then

feeding said electrode strips into said winding between said spacer strips with the leading edges of said electrode strips in



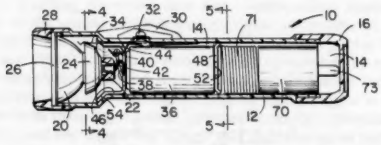
substantially even alignment, and then continuing to wind the section to the desired size, thereby reducing the power factor of an AC capacitor employing such a section.

4,244,011

RECHARGEABLE FLASHLIGHT

Ronald O. Hammel; William J. Barcus, both of Englewood, and Irwin C. Cone, Littleton, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Aug. 27, 1979, Ser. No. 69,952
Int. Cl.³ F21L *9/00, 7/00*
U.S. Cl. 362—183 **21 Claims**



1. A rechargeable portable electric light such as a flashlight comprising:

a housing and a chamber defined therein;

first and second partition members extending transversely of the chamber at least one of which is integrally attached to the housing;

at least one rechargeable electrochemical cell disposed between the first and second partition members within the housing, the cell(s) having opposite generally planar end surfaces making respective substantial abutting contact with the first and second partition members;

a self-contained charger circuit electrically connected to the cell(s) and positioned in the chamber adjacent one of the partition members, and means for coupling the charger circuit to a power source exteriorly of the housing; and

means carried by the housing for selectively producing a light beam energizeable by the cell.

4,244,012

LAMP HOLDER FOR PROJECTION ALIGNER

Magnus B. Hansen, and Walter T. Novak, both of San Jose, Calif., assignors to Computervision Corporation, Bedford, Mass.

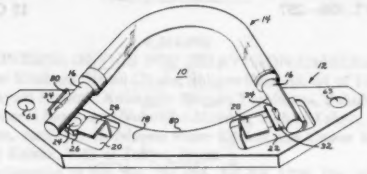
Filed Jun. 29, 1978, Ser. No. 920,289
Int. Cl.³ F21S *5/00*
U.S. Cl. 362—216 **8 Claims**

1. A lamp holder for a capillary, gas discharge arcuate lamp having electrical contacts at each end thereof, said lamp holder comprising:

a generally planar base means capable of being fixed in position relative to an optical system;

a first electrically conductive, current carrying lamp support adapted to secure one end of the arcuate lamp with respect to said base means, said first electrically conductive, current carrying lamp support having a generally planar, relatively flexible portion that lies in a plane generally perpendicular to the plane of said base means; and,

a second electrically conductive, current carrying lamp support adapted to secure the other end of the arcuate lamp with respect to said base means in spaced relation to



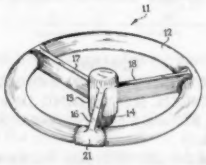
said first electrically conductive, current carrying lamp support, said second electrically conductive, current carrying lamp support having a generally planar, relatively flexible portion that lies in a plane generally parallel to the plane of said base means, whereby the arcuate lamp is free to distort relative to the base means during operation.

4,244,013

CIRCULAR FLUORESCENT LIGHT UNIT

Joseph P. Wotowiec, Cuyahoga Falls, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 21, 1978, Ser. No. 944,650
Int. Cl.³ F21S *5/00*
U.S. Cl. 362—216 **7 Claims**



1. A light unit comprising a circular light source of which the opposed circular edges respectively lie in a pair of spaced apart parallel planes, and three or more individual elongated light baffle members extending radially from the central axis of said circular light source and toward said light source, the widths of said light baffle members being at least as great as the thickness of said circular light source and extending completely between or beyond both planes of said pair of planes such as to cause said light unit when lighted to substantially uniformly illuminate the surface of a shade positioned around said light unit, there being spaces between said elongated light-baffle members through which a lamp harp can pass.

4,244,014

LIGHT MOUNTING TAPES

John C. Van Ess, Chicago, Ill., assignor to Walter A. Ross, Schiller Park, Ill.

Filed Dec. 4, 1978, Ser. No. 966,493
Int. Cl.³ F21V *21/00*
U.S. Cl. 362—249 **2 Claims**

1. A mounting device for electric light sockets adapted to be strung along window frames and the like to position light bulbs in the sockets projecting transversely from the device for display in the window which comprises:

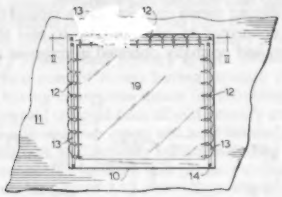
an elongated flexible plastic tape;

a means for mounting the tape along a structure to be illuminated;

a plurality of extruded ribs transversely disposed at intervals

on one side of said tape, each rib having a flattened flanged top;

a retainer strip releaseably mounted on said ribs having a plurality of longitudinal slits disposed along a longitudinal axis thereof in a pattern coordinated to receive said ribs in said slits; and



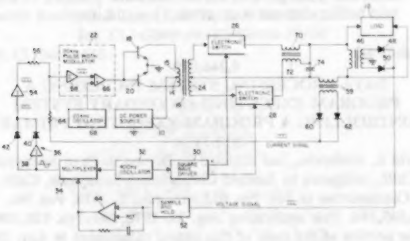
said retainer strip cooperating with said ribs to define loops for draping over said sockets to press the sockets against the tape thereby securing the sockets transversely in the loops against shifting relative to the tape.

4,244,015

PULSE WIDTH MODULATED INVERTER

Ronald F. Beebe, Simi Valley, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed May 24, 1979, Ser. No. 42,387
Int. Cl.³ H02P *13/20;* **H02M** *7/537*
U.S. Cl. 363—8 **5 Claims**



1. Apparatus for inverting DC power into power at an alternating power frequency comprising:

an oscillator at said power frequency;

a high frequency oscillator for generating signals at a frequency substantially higher than said power frequency;

a pulse width modulator connected to receive signals from said high frequency oscillator and having at least two signal inputs for receiving modulating signals;

means for rectifying the output of said power frequency oscillator;

means for applying said rectified power frequency oscillator signal to one of said signal inputs to said modulator;

a DC source of power;

means connected to be responsive to the output of said pulse width modulator for switching said DC at said high frequency to produce a train of pulse width modulated power pulses;

means connected to said source of power frequency to switch said train of power pulses back and forth between opposite polarities in synchronism with the polarity of said power frequency oscillator; and

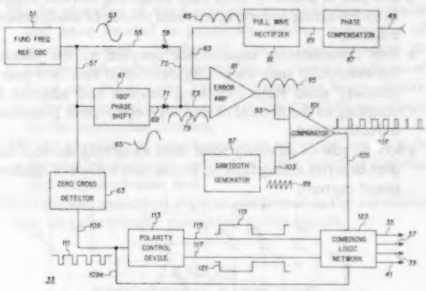
means for removing frequencies at said high frequency from said train of power pulses to produce a load voltage.

4,244,016

SINE-WAVE STATIC CONVERTER

Daniel M. Mitchell, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 20, 1978, Ser. No. 962,252
Int. Cl.³ H02P *13/20*
U.S. Cl. 363—98 **4 Claims**



1. Signal converter means, comprising:

controllable four port signal pass means having two input ports, two output ports and at least a pair of control terminals;

full wave rectifier means connected across the two output ports;

means for generating a rectified alternating current reference frequency signal;

first arithmetic means connected to the means for generating the rectified alternating current reference signal and the full wave rectifier means to provide an error signal that is the difference between the rectified alternating current reference frequency signal and the output of the full wave rectifier means;

means for generating a first signal whose amplitude repeatedly increases from a reference level with time for a predetermined period and then returns to the reference level;

comparator means for comparing the first signal with the error signal and to provide a first state output when the first signal is less than the error signal and to provide a second state output when the first signal is greater than the error signal;

polarity control means for controlling the polarity of the signal on the two output ports;

means for combining the output of the comparator means with the output of the polarity control means, the output of which provides at least two control signals; and

means for applying the control signals to the control terminals whereby in response to the control signals, the controllable four port signal pass means transfers a signal on the input ports of the output ports.

4,244,017

THIRD HARMONIC AUXILIARY COMMUTATED INVERTER HAVING SELECTABLE COMMUTATION CAPACITANCE AS A FUNCTION OF LOAD CURRENT

Robert L. Steigerwald, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 30, 1979, Ser. No. 71,251
Int. Cl.³ H02M *7/515, 1/06*
U.S. Cl. 363—138 **6 Claims**

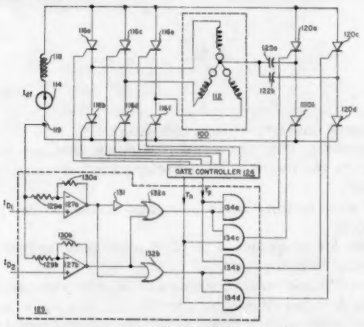
5. For use with a third harmonic auxiliary commutated inverter configured of a plurality of pairs of main solid state switching devices, each of the solid state switching devices of said pairs being coupled in series aiding fashion, each pair being coupled across a source of unidirectional current and having the junction therebetween coupled to a respective phase of a wye-connected, polyphase, inductive load, each of

the solid state switching devices of said pairs being rendered conductive by a main solid state switching device gate controller circuit in a predetermined sequence to supply alternating current to said wye-connected, polyphase, inductive load, main gate controller circuit generating auxiliary gating signals to command commutation of a then conductive inverter main solid state switching device comprising:

a first pair of auxiliary solid state switching devices coupled in series-aiding fashion across said source of unidirectional current;

a first commutating capacitance coupled to the junction between solid state switching devices of said first pair of auxiliary solid state switching devices and adapted for coupling to the neutral of said wye-connected, polyphase, inductive load;

a second pair of auxiliary solid state switching devices coupled in series aiding fashion across said source of unidirectional current;



a second communicating capacitance coupled to the junction between switching devices of said second pair of auxiliary solid state switching devices and adapted for coupling to the neutral of said wye-connected, polyphase, inductive load; and

an auxiliary gate controller circuit coupled to said main gate controller circuit and to each of the solid state switching devices of said first and said second pair of auxiliary solid state switching devices for rendering conductive, responsive to conduction of one of the solid state switching devices of said pairs of inverter main solid state switching devices, one of the solid state switching devices in each of said first and said second pairs of auxiliary solid state switching devices in accordance with inverter current to commutate a then conductive one of the solid state switching devices of said pairs of inverter main solid state switching devices.

4,244,018

INTERLOCK CONTROL OF ASYNCHRONOUS DATA TRANSMISSION BETWEEN A HOST PROCESSOR AND A PLURALITY OF MICROPROCESSORS THROUGH A COMMON BUFFER

Wing F. Mui, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 15, 1978, Ser. No. 906,167

Int. Cl.[2] G06F *1/00*

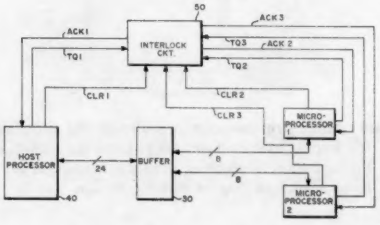
U.S. Cl. 364—200 **6 Claims**

1. An interlock circuit providing for bidirectional control of asynchronous data transfer , via a common buffer element, between a host processor operable to transmit a transfer request signal and at least one of two microprocessors each operable to transmit a transfer request signal when said processors are in operation to transfer data between any two of said processors, said interlock circuit comprising:

first latching means connected to said host processor and normally operated in response to said transfer request signal transmitted from said host processor to store and acknowledge said request signal;

second latching means connected to a first microprocessor and connected to said first latching means and normally operated in response to said transfer request signal transmitted from said first microprocessor to store and acknowledge said request signal; and

third latching means connected to a second microprocessor and connected to said first and to said second latching means and normally operated in response to said transfer



request signal transmitted from said second microprocessor to store and acknowledge said request signal; said storage and acknowledgement of said transfer request signal from a first one of said processors to transmit its transfer request signal being effective to inhibit acceptance and acknowledgement of said transfer request signals from any other processors by inhibiting said transmission of signals acknowledging acceptance and storage of said transfer request signals of said other processors, whereby attempted simultaneous data transfer through said buffer element is controlled by said interlock circuit.

4,244,019

DATA PROCESSING SYSTEM INCLUDING A PROGRAM-EXECUTING SECONDARY SYSTEM CONTROLLING A PROGRAM-EXECUTING PRIMARY SYSTEM

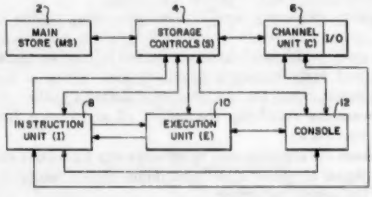
David L. Anderson, and Richard L. Bishop, both of Sunnyvale, Calif., assignors to Amdahl Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 693,552, Jun. 7, 1978, Pat. No. 4,149,244. This application Jun. 29, 1978, Ser. No. 920,398

The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.

Int. Cl.[3] G06F *15/16*

U.S. Cl. 364—200 **9 Claims**



1. A data processing system comprising,

a primary system constructed from a plurality of primary circuits to form a general-purpose programmable computer including primary storage apparatus, primary instruction-handling apparatus and primary instruction-execution apparatus and including means for interconnecting said primary storage apparatus, said primary instruction-handling apparatus and said primary instruction-execution apparatus wherein the primary system processes informa-

tion by executing a primary program of instructions, said primary program of instructions processed in said primary instruction handling apparatus to cause data manipulations in said execution apparatus and to cause fetching and storing of information from and to said pirmary storage apparatus in connection with the processing of information by the primary system and wherein said instruction handling-apparatus includes selected ones of said primary circuits used for the execution of said primary program in said primary system, said primary system including primary interface control means having primary interface inputs and having connection means for providing circuit outputs from said selected ones of said primary circuits in response to said interface inputs and independently of said primary program, said primary system including channel apparatus connected between said primary storage apparatus and a plurality of I/O controllers where the I/O controllers are connected to input/output devices, and

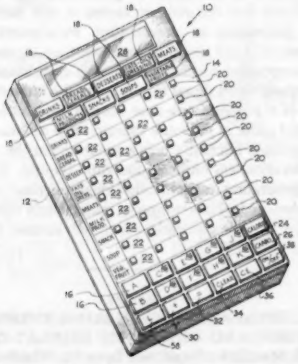
a secondary system including a programmable secondary computer, said secondary computer operable to process a secondary program of instructions, said secondary system including one of said I/O controllers connected as an input/output device to said secondary computer whereby said secondary computer is connected to said primary system as an input/output device, said secondary system including secondary interface control means connected to said secondary computer and controllable by said secondary program, said secondary interface control means having secondary outputs connected to said primary interface inputs for selecting said selected ones of said primary circuits to access said circuit outputs.

4,244,020

CALORIC AND/OR CARBOHYDRATE CALCULATOR

Lloyd P. Ratcliff, 306 Bayou Oaks Dr., Monroe, La. 71203

Filed Jan. 15, 1979, Ser. No. 3,741
Int. Cl.[3] G06F *15/42*; G01G *19/04*
U.S. Cl. 364—413 **34 Claims**



1. A caloric and carbohydrate calculator, comprising:

(a) a calculator case;

(b) a standard numerical calculator electrical operation circuit contained within the case and the standard circuit containing at least a memory add circuit and an equal circuit, as well as other circuits and contacts;

(c) a modified calculator keyboard having a plurality of first, second, third and fourth groups of contacts and whereby;

(1) the plurality of first contacts are numerical in function and indicate visually alphabetical letters and are electrically connected to the standard numerical calculator electrical circuit so that each visual alphabetical letter represents and contacts, when pushed, a different numeral from 0 to 9 in the calculator electrical circuit;

(2) the plurality of second contacts are numerical in function and indicate pre-determined food and drink items and are electrically connected to the calculator electrical circuit in such a manner that each second contact has a predetermined numerical value and each second contact is electrically connected in parallel to other similar second numerical contacts and to the similar first numerical contact in the standard numerical calculator;

(3) the plurality of third contacts are multiplier contacts and have located in proximity thereto indications of predetermined alphabetical letters corresponding to caloric and carbohydrate values of varying portions of food and drink items, the third contacts being electrically connected together and to the standard calculator circuit multiplier contact;

(4) the plurality of fourth contacts are equal contacts in the electrical circuit and indicate the wording calories and carbohydrates; and

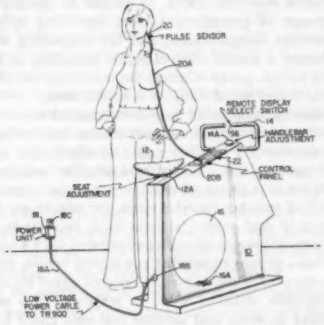
(d) a standard numerical readout positioned in the calculator case and electrically connected to the circuit.

4,244,021

ERGOMETRIC EXERCISER

Robert E. Chiles, III, Sterling, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Mar. 2, 1979, Ser. No. 16,734
Int. Cl.[3] G01L *5/02*; G06F *15/42*
U.S. Cl. 364—413 **25 Claims**



1. An ergometric exercise device having a pedal assembly operated by a user, a work generator coupled to the pedal assembly for providing a controlled amount of resistance to operation of the pedal assembly, and a control panel for inputting and outputting data from said device in a plurality of selected data modes, the improvement comprising:

numerical display means for indicating the magnitude of data for each of said selected data modes;

signal means for indicating which of said data modes has been selected and the units of the data displayed on said numerical display means, said signal means including a signal lamp associated with each of said data modes and circuit means for imparting a different energization state to a selected signal lamp associated with a selected data mode than to the signal lamps associated with the other data modes, said different energization state of said selected signal lamp signifying to a user that said numerical display is displaying units corresponding to said selected data mode; and

selector switch means constraining said circuit means to sequentially transfer said different energization state from one signal lamp to another in response to each actuation of said selector switch means, said transfer occurring in a predetermined sequence; and

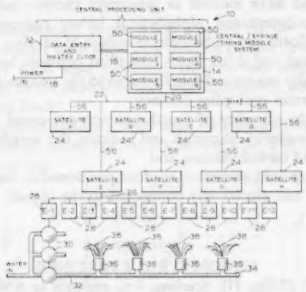
data input means for at least two of said data modes for enabling the user to preset input data into said circuit means.

4,244,022

IRRIGATION CONTROL SYSTEM

Thomas L. Kendall, Big Bear City, Calif., assignor to The Toro Company, Minn.

Filed Feb. 5, 1979, Ser. No. 9,304
Int. Cl.³ G01V *1/00*
U.S. Cl. 364—420 **4 Claims**



1. An irrigation control system comprising:

(a) master controller means for maintaining a master real-time clock, for continuously comparing the value of said master real-time clock to entries in uniquely identified groups of pre-stored master start-time values to find matches therebetween, and for outputting at an output thereof a master control signal including an identifier of the unique group wherein the matching one of said values was found when a match is found; and,

(b) satellite controller means connected to selectively receive said output from said master controller means for maintaining a satellite real-time clock, for continuously comparing the value of said satellite real-time clock to entries in a group of satellite pre-stored start-time values to find matches therebetween, for selectively recognizing ones of said output signals from said master controller means having an identifier associated with a particular one of said groups of satellite pre-stored values, and for selectively outputting a satellite control signal for operating an irrigation solenoid valve in response to a match being found between said satellite real-time clock value and an entry in said satellite group of pre-stored values or upon receipt of a said output master control signal from said master controller means associated with said particular group of values, said satellite controller means including means for selectively causing said satellite controller means to output said satellite control signal in response to said matches of said satellite real-time clock values, receipt of said unique group identified master control signals, or neither, and further including an output whereat said output satellite control signal appears, said latter named output being adapted for operable connection to an irrigation solenoid valve.

4,244,023

MICROPROCESSOR-BASED ENGINE CONTROL SYSTEM WITH ACCELERATION ENRICHMENT CONTROL

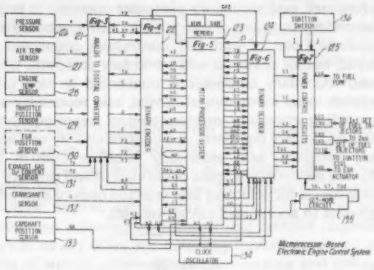
Edwin A. Johnson, Clarkston, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 27, 1978, Ser. No. 881,924
Int. Cl.³ F02B *3/10*; F02D *5/00*; F02M *7/06*
U.S. Cl. 364—431 **15 Claims**

1. In an internal combustion engine having an intake system, an exhaust system, an engine block, a plurality of cylinders disposed in said engine block, a piston mounted for reciprocal movement within each of said plurality of cylinders, throttle means disposed in said intake system for controlling the air flow into said plurality of cylinders, means generating a fuel control signal in response to sensed engine parameters, an electronic engine control system including means responsive to said fuel control signal for selectively supplying a controlled quantity of fuel into selected one or more of said plurality of cylinders, and means for controlling the timing and duration of the ignition timing of said air and fuel supplied to said selected one or more cylinders;

said electronic engine control system comprising program-controlled computing means, memory means for storing data representative of look-up tables of control schedules and control means for implementing a predetermined fuel control law;

means for sensing at least one engine-operating parameter for detecting a need for acceleration enrichment and for generating an acceleration enrichment command in response thereto;



means responsive to said acceleration enrichment command for transmitting an acceleration enrichment interrupt request signal to said computing means, said computing means being responsive to said acceleration enrichment interrupt request signal for generating signals to implement said fuel control law stored in said memory means and generating an acceleration enrichment fuel pulse command word signal in response thereto; and

means responsive to said acceleration enrichment fuel pulse command word signal for initiating the immediate generation of a separate one-time acceleration enrichment fuel control pulse in response thereto or, if a normal fuel control pulse is currently being generated at the time of said acceleration enrichment interrupt request, for initiating the generation of said additional onetime acceleration enrichment fuel control pulse immediately upon the completion of said currently-generated normal fuel control pulse.

4,244,024

SPECTRUM ANALYZER HAVING ENTERABLE OFFSETS AND AUTOMATIC DISPLAY ZOOM

Michael S. Marzalek, Cotati, and Lynn M. Wheelwright, Santa Rosa, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 10, 1978, Ser. No. 932,691
Int. Cl.³ G01R *23/00*
U.S. Cl. 364—485 **7 Claims**

1. Apparatus for use in the spectrum analysis of an input signal, said apparatus comprising:

input means, having inputs for receiving said input signal and a sampling signal, for providing an intermediate frequency signal in response to said input signal and a sampling signal;

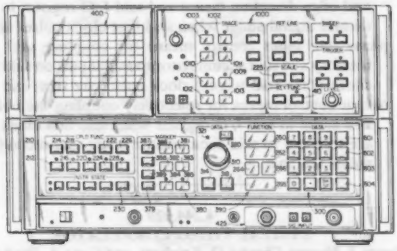
signal processing means coupled to said input means for providing a first digital signal in response to said intermediate frequency signal;

memory means coupled to said signal processing means for

storing electrical representations of said digital signal in response to a memory control signal;

memory control means coupled to said memory means for providing said memory control signal;

display means coupled to said memory means for providing a waveform display of amplitude values over a preselected range of frequency values in response to display control signals and said electrical representations of said digital signal;



operator controls for providing operator control signals and for providing an offset signal in response to operator manifestations indicating it is desired to include an offset of a preselected display parameter; and

display control means coupled to said memory means, said operator controls and to said display means for providing said display control signals in response to said operator control signals and said offset signal.

4,244,025

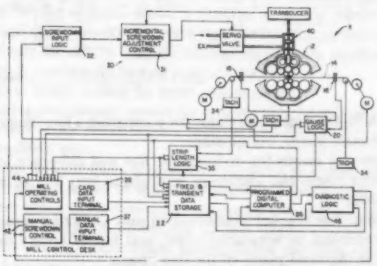
ROLLING MILL GAUGE CONTROL SYSTEM

Thomas J. Alshuk, Fenn Rd., Newington, Conn. 06111

Filed Mar. 20, 1979, Ser. No. 22,313

Int. Cl.³ B21B *37/12;* **G05B** *13/04*

U.S. Cl. 364—472 **16 Claims**



14. A method of providing output gauge control of a rolling mill having at least one mill stand with an adjustable screwdown for controlling the roll opening thereof through which a sheet metal workpiece is fed during a rolling mill run for reducing the thickness of the workpiece from an input gauge to an output gauge, comprising the step of measuring the input gauge (G_I) of each of a plurality of successive samples of the sheet metal workpiece as they approach the rolling mill, measuring the output gauge (G_O) of corresponding sheet metal samples leaving the rolling mill, using computing means for determining corrective incremental screwdown adjustments for achieving a desired output gauge (G_{NO}) by employing a predetermined mill screwdown adjustment model using rolling mill running variables comprising primarily measured input gauge (G_I) and measured output gauge (G_O), and by determining feed-backward incremental screwdown adjustments (ΔSD_B) by employing an input gauge average (G_{AI}) and an output gauge average (G_{SO}), and adjusting the mill screwdown in accordance with said feed-backward incremental screwdown adjustments determined by the computing means.

4,244,026

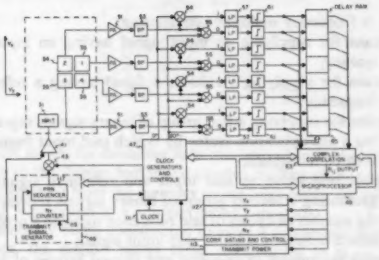
VELOCITY MEASURING CORRELATION SONAR

Frank R. Dickey, Jr., Dewitt, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Nov. 6, 1978, Ser. No. 957,908

Int. Cl.³ G01P *3/42;* **G06F** *15/336;* **G01S** *15/58*

U.S. Cl. 364—565 **10 Claims**



1. Apparatus for measuring the relative velocity of a wave energy source-sensor combination with respect to a field of scatterers separated therefrom by a medium through which the wave energy is propagated, comprising:

(a) a plurality of wave energy transducers included in said source-sensor combination, said transducers having directivity in the general direction of the scattering field and comprising an array of at least two receiving transducers separated from each other by known distances in a plane perpendicular to the major axis of directivity;

(b) means for energizing at least one of said transducers to emit a wave energy pulse train comprising first and second pulses having a predetermined pulse repetition period;

(c) means for sampling simultaneously the echo returns from said scatterer field to the receiving transducers of said array at predetermined sampling intervals;

(d) means for computing a set of measured values of complex correlation using time-delayed samples of echo returns from said first pulse and undelayed samples of echo returns from said second pulse, as sensed at a selected plurality of said receiving transducers, the period of delay of said time-delayed samples being equal to an integral number of sampling intervals and equal to said predetermined pulse repetition period;

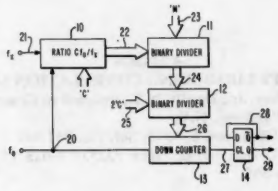
(e) means for processing each of said measured values of complex correlation as a sample of a continuous function of position with each such sample being associated with a location equal to the vector spacing between the pair of receiving transducers from which the samples were obtained, and curve fitting such samples to said continuous function to provide an estimate of the location in vector space of the peak value of correlation magnitude; and

(f) means for deriving an output measure of velocity in each of two directions of relative motion by dividing the components of the location of the correlation magnitude peak along each of said directions by twice said predetermined interpulse interval.

4,244,027
DIGITAL OPEN LOOP PROGRAMMABLE FREQUENCY MULTIPLIER

Sol Shai, Edison, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,837
Int. Cl.[3] G06F 7/52; H03K 5/00
U.S. Cl. 364—703 4 Claims



1. A frequency multiplier comprising:

means for supplying an input signal having an input frequency;

means for supplying a reference signal having a reference frequency;

means for supplying a first group of binary signals representing a multiplication factor by which said input frequency is to be multiplied;

means responsive to said input and reference signals for generating a second group of binary signals representing the number of cycles of said reference signal in a predetermined number cycles of said input signal;

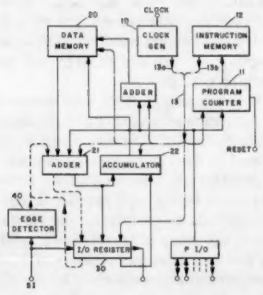
means responsive to said first and second groups of binary signals for dividing said number of cycles of said reference signal in said predetermined number of cycles of said input signal by a divisor proportional to said multiplication factor to produce a third group of binary signals representing the quotient of said division; and

means responsive to said reference signal and said third group of binary signals for dividing said reference frequency of said quotient to produce an output signal having a frequency substantially equal to the product of said input frequency times said multiplication factor.

4,244,028
DIGITAL MICROPROCESSOR HAVING A TIME-SHARED ADDER

Ralph W. Haines, Santa Clara, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Mar. 8, 1979, Ser. No. 18,752
Int. Cl.[3] G06F 7/50
U.S. Cl. 364—712 8 Claims



1. A digital microprocessor chip including:

an adder, a data memory, an accumulator, and an I/O register;

timing generator means for generating interleaved first and second clock pulses;

edge detection means having an input connected to an I/O pin for receiving an externally supplied digital signal, and having an output for generating thereon a single pulse synchronized with said first clock pulses each time said digital signal makes a predetermined transition;

phase one input control means for coupling the output of said edge detection means and said I/O register to inputs on said digital adder when said first clock pulses are true;

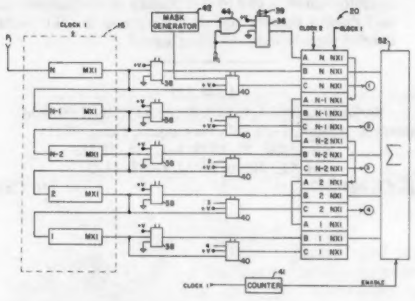
phase two input control means for coupling said digital memory and said accumulator to said inputs on said digital adder when said second clock pulses are true; and

output control means for selectively coupling the output of said adder to said I/O register when said first clock pulses are true and to said accumulator when said second clock pulses are true.

4,244,029
DIGITAL VIDEO CORRELATOR

James J. Hogan; Charles O. Lambert, and Gene A. Wallace, all of Akron, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Dec. 12, 1977, Ser. No. 859,403
Int. Cl.[3] G06F 15/336; G06K 9/62
U.S. Cl. 364—728 19 Claims



1. A digital video correlator for comparing a live image with a reference image, comprising:

digitizing means for dividing the live and reference images into pixels and digitizing said pixels into bits of binary data;

a first shift register connected to said digitizing means for receiving, in sequential order, said bits of binary data of the digitized pixels of the live image;

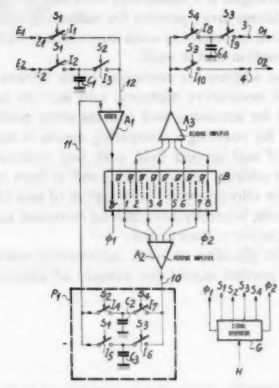
correlator means interconnected between said digitizing means and said first shift register for receiving and maintaining in sequential order the digitized pixels of the reference image and receiving the digitized pixels of the live image from first shift register, said correlator means comprising second, third, and fourth shift registers, corresponding bits of which are interconnected to a plurality of logic circuit means for producing an output corresponding to an exclusive OR function between corresponding bits of said second and third shift registers logically ANDed with the corresponding bit of said fourth shift register; and

gating circuit means connected to said first, second, third, and fourth shift registers for gating selectable inputs to said registers, said gating means being interconnected between said first shift register and said third shift register for selectively gating binary ones, binary zeros, or the bits of binary data of the live image to said third shift register.

4,244,030
MULTIPLEXED FILTERING DEVICE

Alain Albarello, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Nov. 27, 1978, Ser. No. 963,945
Claims priority, application France, Nov. 30, 1977, 77 36040
Int. Cl.³ H03H *15/02, 9/64;* H01L *29/78*
U.S. Cl. 364—825 **5 Claims**



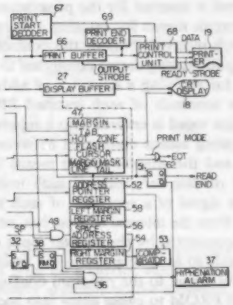
1. A multiplexed filtering device comprising
multiplexing means for producing a multiplexed output signal and having a first and a second input for receiving respectively a first and a second analog signal to be filtered, a control input for receiving sampling signals having a predetermined frequency and an output;
a first adder having two inputs and an output, the first input being coupled to the output of said multiplexing means to receive said multiplexed output signal;
demultiplexing means for producing demultiplexed outputs and having a signal input, a control input for receiving sampling signals at said predetermined frequency, and two outputs on which outputs filtered signals are produced which correspond to said analog signals;
a second adder having an input and an output;
switching and storage means for coupling the output of said second adder to the second input of said first adder;
an amplifier; and
a charge transfer filter of split and interlaced electrode type, including a series of split electrodes alternating with another series of electrodes, in alignment arrangement with a signal electrode connected to said output of said first adder, said split electrodes being divided into two groups odd-numbered and even-numbered, the electrodes of one group being connected to the input of said amplifier and the output of said amplifier being connected to said demultiplexing means input, and the electrodes of the other group being connected to the input of said second adder.

4,244,031
WORD PROCESSOR

Masaaki Izushima; Shintara Abe, and Tomoyuki Hsganuma, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 13, 1977, Ser. No. 841,830
Claims priority, application Japan, Oct. 18, 1976, 51-24604; Oct. 21, 1976, 51-126641
Int. Cl.³ G06F *3/02, 3/12, 3/153*
U.S. Cl. 364—900 **15 Claims**

1. A word processor comprising:
an input keyboard;
a memory for storing word data input from the keyboard;
a display unit for displaying one line of data from the memory;
a printer for printing the line of data;
a display buffer for storing the line of data for display by the display unit;
a print buffer for storing the line of data for printing by the printer; and

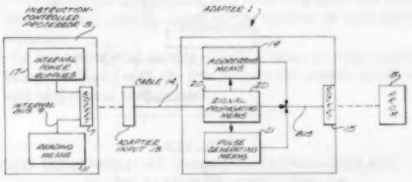


control means for decoding data transmitted from the memory to the display buffer and causing the line of data to be transmitted from the memory to the print buffer for printing in response to a predetermined data code;
the memory being constructed to store a subsequent line of data, the display buffer being constructed to store the subsequent line of data and the display unit being constructed to display the subsequent line of data while the printer is printing the line of data stored in the print buffer.

4,244,032
APPARATUS FOR PROGRAMMING A PROM BY PROPAGATING DATA WORDS FROM AN ADDRESS BUS TO THE PROM DATA TERMINALS

Douglas E. Oliver, 1143 N. Poinsettia Dr., Los Angeles, Calif. 90046

Filed Dec. 16, 1977, Ser. No. 861,186
Int. Cl.³ G06F *13/00;* G11C *7/00*
U.S. Cl. 364—900 **8 Claims**



1. An adapter for use in connection with an instruction-controlled processor to form an apparatus for carrying out a programming operation to program a PROM having a plurality of locations and a plurality of terminals defining a set of address terminals and a set of data terminals, at least one of the terminals being a program control terminal, the processor having processor socket means for having a pre-programmed PROM inserted therein for use in normal operation of the processor, an internal address bus connected to the processor socket means, and reading means for use in such normal operation to read out such a pre-programmed PROM, the reading means including means for causing the internal address bus to carry a multibit signal, the encoding of which in normal operation of the processor is such as to define an address each time the processor executes a predetermined instruction, the reading means further including means for supplying timing signals

used in selecting such pre-programmed PROM, the adapter comprising:

an adapter input for connecting the adapter to the processor, the adapter input including adapter plug means for temporary insertion into the processor socket means so that the multibit signal is received by the adapter from the internal address bus;

adapter socket means into which a PROM to be programmed is inserted for the programming operation; and

control circuit means for entering a plurality of data words into such inserted PROM, the control circuit means including addressing means connected to the adapter socket means for applying a sequence of addresses to the set of address terminals of such inserted PROM so that each such data word is entered into a separate location, signal propagating means connected between the adapter plug means and the adapter socket means for propagating to the set of data terminals of such inserted PROM each multibit signal of a sequence of such multibit signals received from the internal address bus, and pulse generating means connected by the adapter input to receive the timing signals so as to respond to the timing signals to apply a control signal to the program control terminal of such inserted PROM to cause entry into such inserted PROM each multibit signal that is propagated from the internal address bus to the set of data terminals.

4,244,033

METHOD AND SYSTEM FOR OPERATING AN ASSOCIATIVE MEMORY

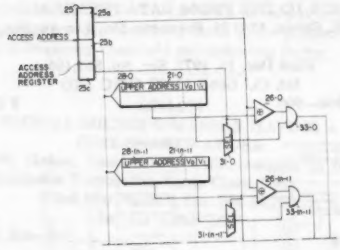
Akira Hattori, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 8, 1978, Ser. No. 967,591

Claims priority, application Japan, Dec. 27, 1977, 52/158223

Int. Cl.³ G06F *13/00*; G11C *15/00*

U.S. Cl. 364—900 **8 Claims**



1. A method of operating an associative memory provided for storing information in a data processing system, said method comprising the steps of:

extracting necessary information by means of access to said associative memory and to updating information retained in the associative memory,

providing said associative memory with a data portion for storing a plurality of block information units as one module information unit, and an address array portion for storing a module address corresponding to said one module information unit,

providing said associative memory further with valid information arranged in conjunction with said module address in said address array portion for indicating which of said plural block information units constituting said one module information unit is valid,

providing an address for retrieving block information units from said associative memory, said address including a first field for accessing said address array portion, a second field for enabling a comparing means to compare the content of said second field with said address read out from said address array portion, and at least one significant bit for allotting valid information of said block information units, whereby to obtain an increased capacity for said associative memory, and

updating said plurality of block information units stored in said data portion as said one module information unit.

4,244,034

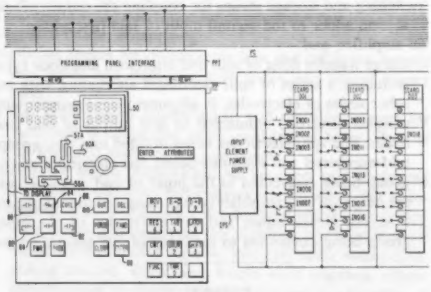
PROGRAMMABLE DUAL STACK RELAY LADDER LINE SOLVER AND PROGRAMMING PANEL THEREFOR

David M. Cherba, Pontiac, Mich., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 9, 1979, Ser. No. 2,159

Int. Cl.³ G06F *9/00*, *15/46*

U.S. Cl. 364—900 **43 Claims**



16. A programmable controller for solving a ladder diagram, comprising:

(a) digital memory means arranged in X bits per words;

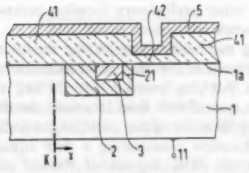
(b) programming means for entering one contact of said ladder diagram into one word of said digital memory means by utilizing a combination of the attributes UP, OPEN and RETURN and an appropriate contact address; and

(c) solving means interconnected with said memory means for solving said ladder diagram by utilizing words stored in said digital memory means.

4,244,035
HIGHLY INTEGRATED DYNAMIC MEMORY ELEMENT

Karl Knauer, Kirchseeon, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 23, 1979, Ser. No. 69,177
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842588
Int. Cl.³ G11C *11/24*
U.S. Cl. 365—149 6 Claims



3. A method for operating a memory element formed of a doped first conductivity type semiconductor substrate, an insulating layer on the substrate having thick and thin film regions, a strip-shaped second conductivity type semiconductor region in the substrate and running along a surface thereof below the insulating layer, a conducting path on the insulating layer running obliquely to the strip-shaped region and over the thin film region adjacent an edge of the strip-shaped region, an island-shaped semiconductor region of first conductivity type within the strip-shaped region and located more closely to the edge of the strip-shaped region adjacent the thin film area, comprising the steps of:

(a) for preparing the write-in of information

(i) depleting the strip-shaped semi-conductor region with respect to majority carriers by applying a potential as a bias voltage thereto;

(ii) further raising the potential of the strip-shaped semiconductor region until the majority carriers have drained out of the island-shaped semiconductor region into the substrate;

(iii) lowering the potential of the strip-shaped semiconductor area to such an extent that a potential well arises in the island-shaped semi-conductor region;

(b) for writing-in of a digital information of a first type lowering the potential of the strip-shaped semiconductor region and lowering the voltage being applied to the conducting path so that majority carriers flow from the substrate covered by the thin film region via the strip-shaped semiconductor region into the island-shaped semiconductor region;

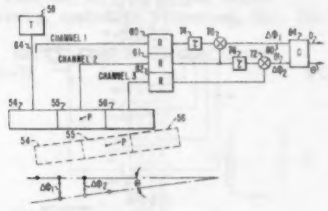
(c) for writing-in digital information of a second type lowering the potential of the strip-shaped semiconductor region and applying a high voltage to the conducting path so that underneath the thin film region a potential barrier arises which prevents a flowing of the majority carriers from the substrate into the island-shaped semiconductor region; and

(d) that for the storage of the information which is written-in, the potential of the strip-shaped semiconductor region is again raised to such an extent that no charge exchange occurs between the island-shaped semiconductor region and the substrate.

4,244,036
ELECTRONIC STABILIZATION FOR DISPLACED PHASE CENTER SYSTEMS

Robert S. Raven, Catonsville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 21, 1978, Ser. No. 972,166
Int. Cl.³ G01S *15/89, 13/90*
U.S. Cl. 367—88 9 Claims



1. Data correction apparatus for sensor systems adapted to travel over a target area, on a carrier vehicle, comprising:

(a) an array of linearly arranged active elements, at least one of which is adapted to both transmit and receive energy;

(b) means for periodically transmitting energy from said one element toward said target area during travel of said carrier and for receiving energy returns on all said elements to derive, as a result of each said transmission at least two signals corresponding to two spatial sample locations along the path of said travel;

(c) said signals from one transmission nominally corresponding to the same spatial location as said signals from a subsequent transmission, but subject to relative lateral and angular deviation; and

(d) means for comparing said two signals from said one transmission with said two signals from said subsequent transmission to generate at least one correction signal.

8. Apparatus according to claim 1 wherein:

(a) said detection system is an acoustic synthetic aperture sonar system; and wherein

(b) an end element of said array is adapted to transmit acoustic energy;

(c) said array being of length L and said subsequent transmission being made when said array has traveled L/2 from said first transmission;

(d) said means for transmitting and receiving derives a number of spatial samples equal to the number of said active elements;

(e) the last two spatial sample signals of said one transmission being compared with the first two spatial sample signals of said subsequent transmission.

4,244,037
TWO DIMENSIONAL IMAGING USING SURFACE WAVE ACOUSTIC DEVICES

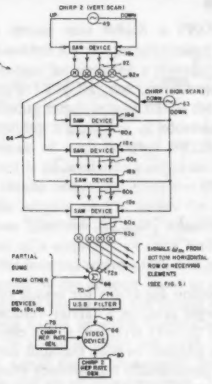
Edward C. Jelks, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 21, 1979, Ser. No. 41,113
Int. Cl.³ G01S *3/84*
U.S. Cl. 367—121 9 Claims

1. An apparatus for processing the outputs of a two dimensional planar array of spaced apart receiving elements where the receiving elements are grouped in spaced apart horizontal and vertical rows, said apparatus comprising:

a plurality of surface acoustic wave (SAW) devices, each SAW device corresponding to a respective horizontal row of receiving elements and being adapted to produce a plurality of horizontal phase shift outputs which linearly correspond to the number and horizontal spacing of receiving elements in a respective horizontal row;

an additional SAW device connected to the horizontal SAW devices for introducing a vertical phase shift factor in the horizontal outputs of each horizontal SAW device so that each SAW device is capable of producing a plurality of combined phase shift outputs, the vertical phase shift factors corresponding linearly to the spacing of the receiving elements in a vertical direction; and



means connected to each horizontal SAW device for mixing the combined phase shift outputs with the respective outputs of the receiving elements in a respective horizontal row so as to produce a plurality of mixed output signals.

4,244,038

WATCH HAVING ADJUSTABLE DATE AND DAY INDICATORS

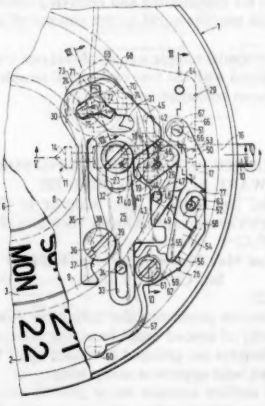
Wolfgang Ganter, Schramberg; Albert Ginter, Lauterbach; Josef King, Schramberg, and Peter Riis, Deisslingen, all of Fed. Rep. of Germany, assignors to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Dec. 17, 1979, Ser. No. 104,391

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855898

Int. Cl.³ G04B *19/24, 27/00*

U.S. Cl. 368—35 **9 Claims**



1. In a clock of the type including a day-of-week indicator ring and a date indicator ring, an adjusting shaft axially movable between at least a mode selection position and a working position, a mode selecting mechanism operably connected to the shaft and actuated by rotation of the shaft in its selection position for selecting one of the indicator rings for adjustment, and an adjusting mechanism responsive to rotational movement of the shaft in its working position for adjusting the one of the indicator rings selected for adjustment, the improvement wherein:

the selecting mechanism comprises a displaceable toothed switching wheel and a selector slide;

the selector slide being generally connected to the shaft for displacement in response to axial movement of the shaft between its mode selection and working positions;

the selector slide including control curve means displaceable with the selector slide for positioning the switching wheel in either of two preliminary locations in response to rotation of the shaft in a corresponding direction while in its mode selection position, one of the preliminary locations corresponding to a date adjustment mode and the other preliminary location corresponding to a day of week adjustment mode; and

the adjusting mechanism comprising means responsive to axial movement of the shaft from its mode selection position to its working position for shifting the switching wheel into one of two final locations determined by the preliminary location of the switching wheel;

one final location constituting a date adjusting location wherein the switching wheel meshes with a toothed periphery of the date ring; and

the other final location constituting a day of week adjusting location wherein the switching wheel meshes with a toothed periphery of the day of week ring.

4,244,039

ELECTRO-MECHANICAL WATCH

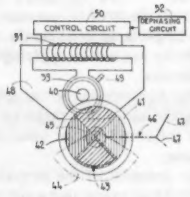
Claude Laesser, La Chaux-de-Fonds, Switzerland, assignor to Ebauches S.A., Neuchatel, Switzerland

Filed May 3, 1978, Ser. No. 902,734

Claims priority, application Switzerland, May 6, 1977, 5734/77

Int. Cl.³ G04B *9/00*

U.S. Cl. 368—66 **2 Claims**



1. An electronic timepiece comprising:

a source of electric energy;

means coupled to the electric energy source for producing timebase pulses;

drive means responsive to the timebase pulses for producing drive pulses;

a stepping motor which is driven by the drive pulses;

time display means driven by the motor for displaying time;

an indicating member which is user viewable and which is rotated a predetermined amount by each step of the motor, the indicating member comprising a rotatable disc having a plurality of sectors of different appearance, a display window means adjacent the rotatable disc and having a shape which permits viewing of a single sector, the indicating member having at least one first rest position between steps of the motor to indicate no change past a determined value in a working parameter of the timepiece and at least one second rest position between steps of the motor to indicate a change past a predetermined value in the working parameter of the timpiece, the number of

sectors of different appearance being equal to the number of rest positions, the indicating member having a normal rest position corresponding to the first rest position, one of the plurality of sectors being normally visible through the display window means when the indicating member has the first rest position; and

means responsive to a change past a predetermined value in the working parameter for causing the drive means to produce an additional drive pulse, driving the stepping motor at least one step and modifying the normal rest position of the indicating member to the second rest position, whereby said one of the plurality of sectors which is normally visible is no longer adjacent the display window means, and a second one of the plurality of sectors of different appearance is adjacent the display window means, to thereby indicate a change in the working parameter.

4,244,040

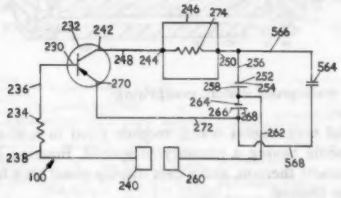
MINIATURE ELECTRONIC DEVICE CONSTRUCTION

Robert Fondiller, 200 W. 58 St., New York, N.Y. 10019; Christian Grund, Bronx; Steve Dobler, Whitestone, and Michael Braun, Brooklyn, all of N.Y., assignors to Robert Fondiller, New York, N.Y.

Division of Ser. No. 609,744, Sep. 2, 1975, abandoned. This application Oct. 10, 1978, Ser. No. 918,104

Int. Cl.[3] **G04C** *17/00, 23/02*

U.S. Cl. 368—69 **4 Claims**



1. A digital watch comprising a watch case, printed circuit means having a pair of apertures, extending through said printed circuit means, with said printed circuit means disposed within said watch case, a pair of batteries disposed within said watch case, electrical connection means connecting said printed circuit means and said batteries, integrated circuit watch chip means mounted on said printed circuit means, digital display means mounted on said printed circuit means, circuit connection means on said printed circuit means connecting said digital display means and said integrated circuit watch chip means, with said batteries disposed extending into said aperture in said printed circuit means with said integrated circuit watch chip means including a demand pad and a negative bonding pad with said integrated circuit watch chip means operating to illuminate said display means for display of a signal responsive to the application of a positive pulse to said demand pad, and further including a solid state touch switch comprising a first and a second terminal insulated from said watch case, a resistor, circuit connection means connecting said resistor and said first terminal, a PNP bipolar transistor having a base, an emitter, and a collector terminal, circuit connection means connecting said resistor and said base terminal, circuit connection means connecting said collector terminal and said demand pad of said integrated circuit chip means, circuit connection means connecting said positive bonding pad of said integrated circuit chip means and the negative terminal of a first of said batteries, circuit connection means connecting the positive terminal of said first battery and the negative terminal of a second of said batteries, circuit connection means connecting the positive terminal of said second battery and said emitter terminal of said PNP bipolar transistor, and circuit connection means connecting said negative terminal of said second battery to said second terminal, whereby contact between said first and second terminals causes the application of a negative pulse to said demand pad causing the display of a signal.

4,244,041

ELECTRONIC TIMEPIECE WITH AN ALARM DEVICE

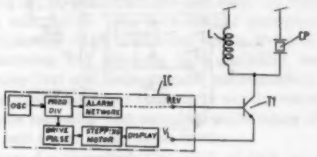
Michel Vermot, Les Ponts-de-Martel, Switzerland, assignor to Ebauches Electroniques SA, Marin, Switzerland

Filed Oct. 27, 1978, Ser. No. 955,199

Claims priority, application Switzerland, Dec. 21, 1977, 17775/77

Int. Cl.[3] **G04B** *23/02;* **G04C** *21/00*

U.S. Cl. 368—73 **6 Claims**



1. In an electronic timepiece having an alarm network and including an oscillator connected to a frequency divider supplying driving pulses to a stepping motor for driving at least one display device, the improvement wherein said alarm network comprises:

control logic means for selectively placing the time-piece in an alarm mode by providing an alarm-on signal;

comparator means coupled to the frequency divider for providing an alarm-time signal at a preselected time of alarm;

alarm logic means coupled to said control logic means and said comparator means and responsive to said alarm-on signal and said alarm-time signal for providing an alarm-enabling signal;

an electroacoustic transducer; and

electronic circuit means coupled to said alarm logic means, said frequency divider, and said electroacoustic transducer, said electronic circuit means being responsive to said alarm-enabling signal for delivering to said electroacoustic transducer a train of alarm pulses shifted in time with respect to the driving pulses of the stepping motor such that said alarm pulses do not appear simultaneously with said driving pulses occurring during the presence of said alarm enabling signal.

4,244,042

ALARM TIMEPIECE

Toshihide Samejima; Nakanobu Moritani; Hajime Oda, and Masanori Fujita, all of Tokyo, Japan, assignors to Kabushiki Kaisha Seikosha, Tokyo, Japan

Filed Jul. 21, 1978, Ser. No. 926,633

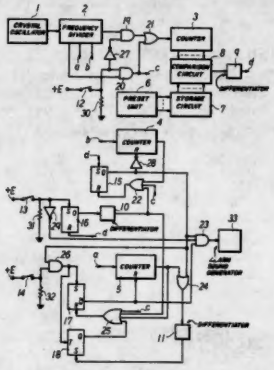
Claims priority, application Japan, Jul. 29, 1977, 52-91990

Int. Cl.[3] **G04B** *23/02;* **G04C** *21/16*

U.S. Cl. 368—73 **2 Claims**

1. An alarm timepiece comprising: time count means for counting time; first means for producing a coincidence output when the content of said time count means coincides with a preset alarm time; actuatable switching means operative when manually actuated for producing an output; an alarm sound generator operative when activated for generating an acoustic alarm; second means for enabling activation of said alarm sound generator in response to the coincidence output and preventing activation of said alarm sound generator in response to the output from said switching means and for enabling said alarm sound generator to activate again in response to the next coincidence output; time adjustment means for adjusting the content of said time count means; and control

means operable irrespectively of actuation of said switching means for compulsorily stopping the generation of the acoustic



alarm from said alarm sound generator during adjusting of said time count means.

4,244,043

FREQUENCY DIVISION SYSTEM

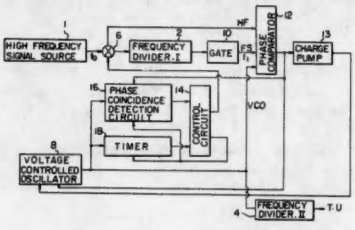
Hiro Fujita, Sayama; Akira Tsuzuki, Tokorozawa; Heihachiro Ebiha, Tokorozawa, and Fukuo Sekiya, Tokorozawa, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Mar. 29, 1979, Ser. No. 25,048

Claims priority, application Japan, Mar. 31, 1978, 53-37634; Apr. 11, 1978, 53-42382; Jul. 7, 1978, 53-82752; Jul. 18, 1978, 53-87588; Jul. 26, 1978, 53-91315

Int. Cl.³ G04G *3/02*; H03L *7/00*

U.S. Cl. 368—85 **20 Claims**



1. A frequency division system for producing a phase locked signal of relatively low frequency which is synchronized in phase with a signal of relatively high frequency and whose frequency is an integral submultiple of said relatively high frequency, comprising:

frequency divider circuit means responsive to said relatively high frequency signal for producing a reference signal of said relatively low frequency;

a voltage controlled oscillator circuit for generating said phase locked signal, comprising a first control element for controlling the frequency of said phase locked signal and a second control element for controlling the phase of said phase locked signal in an instantaneous manner;

a phase comparator circuit for comparing the phase of said phase locked signal and the phase of said reference signal and for producing a first control signal if the phase of said phase locked signal is lagging that of said reference signal and for also producing a second control signal if the phase of said phase locked signal is leading the phase of said reference signal, whereby one of said first and second control signals is applied to said second control element of said voltage controlled oscillator circuit to cause the phase of said phase locked signal to come into coincidence with said reference signal phase; and

a charge pump circuit comprising a capacitor, charge control means responsive to said first control signal for increasing the amount of charge in said capacitor and discharge control means responsive to said second control signal for decreasing the amount of charge in said capacitor, the voltage appearing across said capacitor being applied to said first control element of said voltage controlled oscillator circuit so as to cause the frequency and phase of said phase locked signal to come into coincidence with the frequency and phase of said reference signal.

4,244,044

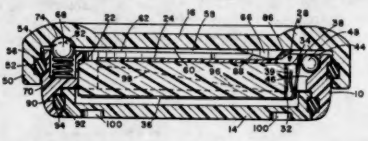
WATERPROOF SPORT WATCH

Mark S. Olsson, 450 A Serpentine Dr., Del Mar, Calif. 92014

Filed Sep. 4, 1979, Ser. No. 72,053

Int. Cl.³ G04B *37/00*

U.S. Cl. 368—291 **10 Claims**



1. A waterproof watch, comprising:

a case;

a solid state digital watch module fixed in said case, the module having a plurality of spaced, function initiating contacts thereon, and a data display panel on a front surface thereof;

a front cover rotatably mounted on and sealed to said case, at least a portion of said cover being transparent and revealing said display panel;

said module having contact engaging electrical switch means thereon at the position of each contact on said module;

said cover having actuating means for actuating said switch means selectively at specific rotational positions of the cover;

and said case having indexing means therein engaging said cover to index the cover to the specific switch actuating positions.

4,244,045

OPTICAL MULTIPLEXER AND DEMULTIPLEXER

Kiyoshi Nosu, Yokohama; Hideki Ishio, and Tetsuya Miki, both of Yokosuka, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Jan. 31, 1979, Ser. No. 8,161

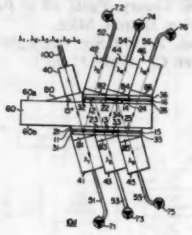
Claims priority, application Japan, Jan. 31, 1978, 53/8873

Int. Cl.³ H04B *9/00*

U.S. Cl. 370—3 **20 Claims**

1. An optical multiplexer comprising a plurality of flat optical filter means, each of which transmits a different predetermined wavelength and reflect other wavelengths, said optical filter means being arranged substantially in a pair of spaced parallel rows, the filter means in the first row being staggered in relation to the corresponding filter means in the second row so that an optical beam is transmitted or reflected by the optical filter means in sequence; an optical means provided behind each of said optical filter means to provide a parallel optical

beam from an optical source to each of said optical filter means with a small angle of incidence, and another optical means



provided at the output of the final optical filter means to connect the output optical beam to an optical fiber.

4,244,046

DIGITAL DATA TRANSMISSION SYSTEM PROVIDING MULTIPOINT COMMUNICATIONS

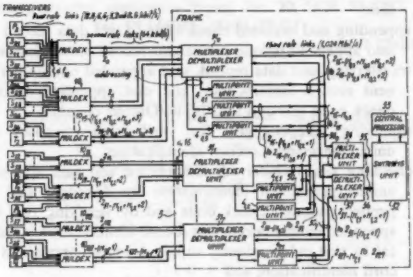
Germain G. Brouard, Dourdan, and Claude A. Molleron, Fontenay-aux-Roses, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France

Filed Feb. 5, 1979, Ser. No. 9,668

Claims priority, application France, Feb. 7, 1978, 78-03391

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—62 **6 Claims**



1. A digital data transmission system providing multipoint communications in which the main data transceivers of each multipoint communication can communicate with a plurality of secondary transceivers of said multipoint communication and said secondary data transceivers can each, in turn, communicate with said main data transceiver, said digital data transmission system comprising:

first means for multiplexing incoming digital links having a first rate into incoming digital links having a second rate, said first rate incoming links transmitting input component digital words which have first rates different from but multiples of one another and which are transmitted by said main and secondary data transceivers, the transmission periodicities of said input component digital words in each first rate link being equal to the respective ratio of said second rate to said first rate, and bits which have a predetermined position in said input component digital words of a second rate incoming link frame, forming a pseudo-random framing sequence for addressing the incoming first rate digital links;

second means for multiplexing a plurality of groups of said second rate digital links into incoming digital links having a third rate;

third means for multiplexing said third rate incoming digital links into an incoming highway having a fourth rate;

means for selectively switching said input component words from said fourth rate incoming highway to output word positions in an outgoing highway having said fourth rate in accordance with the incoming first rate digital link addresses, the component word allocated to each main data transceiver in the third rate outgoing multiframe before transferring in a multipoint junction unit and in the third rate incoming multiframe after transferring in a multipoint junction unit having a predetermined word position which is followed by the word positions allocated to the secondary data transceivers of the same multipoint communication;

first means for demultiplexing said fourth rate outgoing highway into outgoing digital links having said third rate;

second means for demultiplexing each of said third rate outgoing digital links into a group of outgoing digital links having said second rate, each second multiplexing and demultiplexing means associated with a group of second rate incoming and outgoing links including means for producing first addressing signals corresponding to said predetermined main data transceiver word positions in the third rate incoming and outgoing multiframes after and before said transferring, respectively;

third means for demultiplexing each of said second rate outgoing digital links into outgoing digital links having said first rate and transmitting output component words to be received by said main and secondary data transceivers;

a plurality of groups of multipoint junction units, each multipoint junction unit belonging to a group being interconnected to the pair of third rate incoming and outgoing digital links associated with said group, said multipoint junction unit comprising means for simultaneously transferring the input words assigned to the main data transceiver of each of said multipoint communications and corresponding to said predetermined position of said third rate outgoing multiframe on said third rate outgoing digital link of said group to output word positions assigned to the secondary data transceiver of said multipoint communication and being successive to said predetermined position of said third rate incoming multiframe on said third rate incoming digital link and means for sequentially transferring the input words assigned to the secondary data transceivers of said multipoint communication which communicates with said main date transceiver on said third rate outgoing digital link of said group to output word positions assigned to said main transceiver and corresponding to said predetermined position of said third rate incoming multiframe on said third rate incoming digital link.

4,244,047

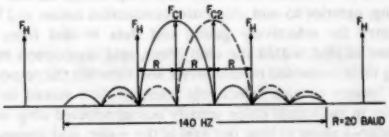
MULTIPLEXED CARRIER TRANSMISSION THROUGH HARMONIC POLLUTED MEDIUM

William C. Perkins, Sachse, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 20, 1979, Ser. No. 22,235

Int. Cl.³ H04J *1/02, 1/20*

U.S. Cl. 370—69 **7 Claims**



1. Apparatus for transmitting digital data by frequency division multiplexed carrier signals through a medium polluted with harmonic signals whereby the harmonics may be nulled in the receiver detector, comprising:

means for generating a first carrier signal whose frequency is

asymmetrically positioned between two of the adjacent harmonics;

means for modulating the first carrier signal with digital data at a baud rate so that the spectral density nulls of the modulated carrier signal in the frequency domain coincide with said two adjacent harmonics;

means for generating at least one additional carrier signal whose frequency is also positioned between said two adjacent harmonics but is different from that of the first carrier signal and whose frequency separation from any adjacent carrier signal is equal to the baud rate or some multiple thereof, and

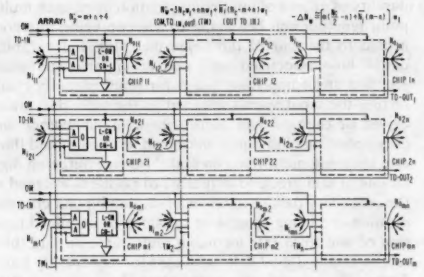
means for modulating each additional carrier signal with digital data at said baud rate.

4,244,048

CHIP AND WAFER CONFIGURATION AND TESTING METHOD FOR LARGE-SCALE-INTEGRATED CIRCUITS

Frank F. Tsui, Briarcliff Manor, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,641
Int. Cl.[3] G01R *31/28;* G06F *11/00*
U.S. Cl. 371—15 **17 Claims**



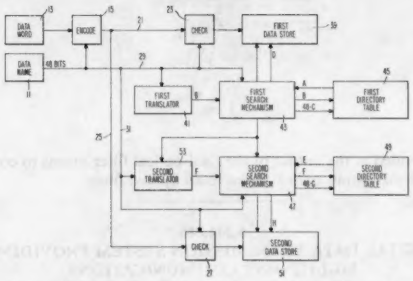
1. A circuit configuration for facilitating the testing of individual chips fabricated on wafers produced by large-scale-integrated circuit manufacturing techniques, wherein each wafer is composed of a plurality of individual chips arranged in an array configuration along two axes of said wafer, said array comprising M rows and N columns of chips, each said chip comprising a chip image which includes a chip core containing the functional circuitry to be utilized on-module subsequent to the dicing of the wafer, each said chip core comprising at least one combinatorial network, and at least one set of LSSD storage latches, wherein an LSSD storage latch set is defined as a storage register capable of being selectively operated in a parallel or serial mode, said chip images being larger than the contained chip cores and being located contiguously on said wafer in said array configuration so as to define chip image boundaries therebetween, each said chip image further containing, exterior to said chip core, connection means and logic circuitry for selectively gating test data to and from said latches located within the chip cores, said connection means being interconnected on said wafer and between the respective chip images to also selectively transmit data stored in said latches in individual chips serially across selected chip image boundaries along at least one axis of the wafer, said connection means being configured to interconnect said latches along said at least one axis and across said chip image boundaries to effectively form a single serial shift register having a plurality of sets of latches and means for serially shifting the entire contents of the said shift register out of said wafer for LSSD testing purposes.

4,244,049

METHOD AND APPARATUS FOR ENHANCING I/O TRANSFERS IN A NAMED DATA PROCESSING SYSTEM

Kenneth L. York, Huntingdon Valley; Peter R. Annal, West Chester, and John E. Legory, Paoli, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 2, 1979, Ser. No. 9,250
Int. Cl.[3] G06F *11/10*
U.S. Cl. 371—38 **4 Claims**



1. In a named data processing system, a method for securely storing a data record through an Input/Output channel comprising the steps of:

appending a unique permanent record identification to said data record;

generating an encoded check code covering said data record and said appended unique permanent record identification;

appending said encoded check code to said data record and said appended unique permanent record identification;

transferring said data record, said appended unique permanent record identification and said appended encoded check code through said Input/Output channel;

supplying independently for verification purposes said unique permanent record identification;

checking said transferred data record and said appended unique permanent identification by decoding said appended encoded check code and by verifying that said appended unique permanent record identification is identical to said independently supplied unique permanent record identification; and

storing said checked data record with said appended unique permanent identification and said appended encoded check code.

4,244,050

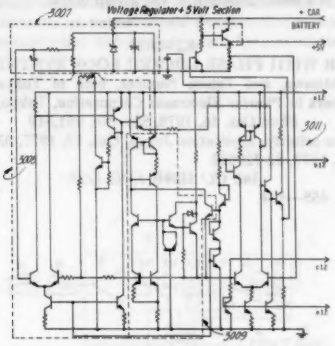
DUAL VOLTAGE REGULATOR WITH LOW VOLTAGE SHUTDOWN

Robert E. Weber, and Harold E. Weissler, II, both of Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 27, 1978, Ser. No. 881,921
Int. Cl.[3] G05F *1/38;* G01R *19/165*
U.S. Cl. 371—66 **2 Claims**

1. A voltage regulator for use in controlling the supply voltage to a microprocessor-based electronic engine control system responsive to one or more sensed engine-operating parameters for generating engine control commands, said voltage regulator comprising series pass transistor means for achieving a low input to output offset, adjustable input means for establishing a predetermined threshhold level of supply line voltage below which said regulator shuts down, and means for

automatically shutting down said regulator when said supply line voltage drops below said predetermined threshhold level



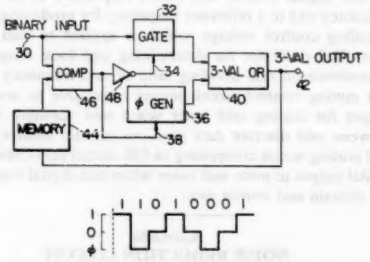
for preventing the erroneous operation of said electronic engine control system at low supply voltages.

4,244,051

DATA COMMUNICATION METHOD AND APPARATUS THEREFOR

Nobuyuki Fujikura; Makoto Noomi, both of Kawasaki, and Hirokazu Ihara, Machida, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jan. 22, 1979, Ser. No. 5,470
Claims priority, application Japan, Jan. 20, 1978, 53-4357
Int. Cl.[3] H04L *25/49, 25/34*
U.S. Cl. 375—17 **12 Claims**



1. A data communication method comprising the steps of:

generating one of first, second and third signals selectively and at a predetermined time interval in accordance with each bit of binary coded data to be transmitted; and

transmitting said generated signals; and

wherein said generating step includes the steps of

detecting first and second occurrences of coincidence, said first occurrence of coincidence corresponding to coincidence between said first signal and a signal generated in response to a bit preceding a present bit to be transmitted by one bit, and said second occurrence of coincidence being coincidence between said second signal and said signal generated in response to said preceding bit,

generating said first and second signals in response to said present bit being a logical "1" and a logical "0," respectively, under the condition that said first and second occurrence of coincidence are not detected, respectively, and

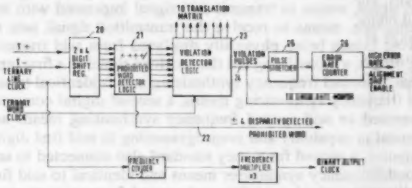
generating said third signal in response to said present bit, under the condition that said first occurrence of coincidence is detected when said present bit is a logical "1" and under the condition that said second occurrence of coincidence is detected when said present bit is a logical "0."

4,244,052

RECEIVER WORD ALIGNMENT FOR DIGITAL TRANSMISSION SYSTEMS USING A REDUNDANT TERNARY LINE CODE

Alan D. Hemsworth, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 1, 1979, Ser. No. 16,660
Int. Cl.[3] H04L *7/06, 25/34*
U.S. Cl. 375—19 **5 Claims**



1. A method of aligning a digital transmission system receiver to incoming redundant ternary line code signals comprising the steps of:

determining whether ternary code words of said line code signals, as identified by timing control signals of said receiver, exceed a predetermined rate of ternary code translating rule violations;

determining the rates at which, if said predetermined rate is exceeded, the different ternary code phases include prohibited ternary code words, where the term "phases" is defined as the plurality of possible first digits in a ternary code word and a prohibited ternary code word is a redundant ternary code word not allocated to a binary equivalent; and

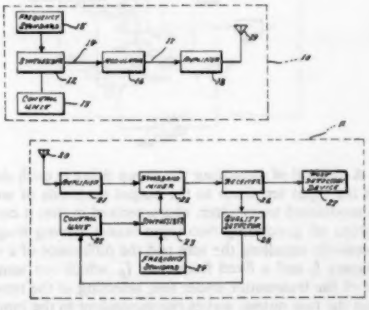
shifting time control signals of said receiver to align said receiver with that ternary code phase having the lowest rate of said prohibited ternary code words if that phase is different from the phase to which said receiver is already aligned.

4,244,053

PRIVACY COMMUNICATION METHOD AND SYSTEM

Marvin R. Clinch, Oneida, N.Y.; Calvin R. Graf; Paul E. Martin, both of San Antonio, Tex., and Robert B. Fenwick, Palo Alto, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 10, 1970, Ser. No. 73,812
Int. Cl.[3] H04K *1/00*
U.S. Cl. 455—29 **6 Claims**



1. A privacy communication system comprising means of generating a signal continuously changing frequency with time in accordance with a preset relationship, said generating means

being composed of a first frequency synthesizing means, a first digital computer connected to said frequency synthesizing means, said digital computer having the ability to very rapidly read memory storage to determine the increment of frequency change at any instant of time and also being preprogrammed in accordance with the preset relationship in frequency and in time, a first frequency standard serving as a frequency base for said frequency synthesizer means, said frequency standard maintaining frequency stability over an extended period of time, means to selectively impress intelligence upon said generated signal, means to transmit said signal impressed with said intelligence, means to receive the transmitted signal, said receiving means being physically displaced from said transmitting means, a mixer being fed the received signal as a first input signal, a second frequency synthesizing means identical to said first frequency synthesizing means, a second digital computer connected to said second frequency synthesizing means and identical in capability and preprogramming to said first digital computer, a second frequency standard also connected to said second frequency synthesizer means and identical to said first frequency standard, said first and second frequency standard initially being synchronized, said second frequency synthesizer providing a second input signal for said mixer, a receiver being fed the output signal from said mixer, said receiver being utilized as an intermediate frequency amplifier and detector, a post detection device receiving the output signal from said receiver for conversion to the initially impressed intelligence, and a threshold detector also receiving the output signal of said receiver and providing a control signal to said second digital computer.

4,244,054

METHOD AND APPARATUS FOR MEASURING THE AMPLITUDE AND THE GROUP DELAY FOR EACH SIDE-BAND OF AN AMPLITUDE MODULATED TRANSMITTER

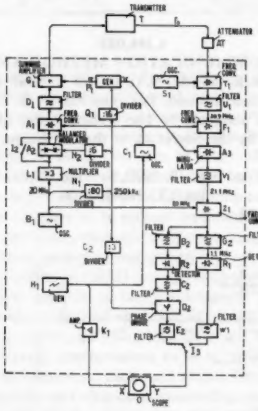
Gianfranco Lorea, Corso Giambone 7, Turin, Italy

Filed Apr. 3, 1978, Ser. No. 893,189

Claims priority, application Italy, Aug. 31, 1976, 69118 A/76

Int. Cl.³ H04B *1/02*

U.S. Cl. 455—115 **5 Claims**



1. A method of measuring the group delay in each sideband, from the input terminals to the output terminals of an amplitude modulated transmitter, characterized in that it comprises the steps of: generating two input waves having frequencies respectively equalling the sum and the difference of a variable frequency f_v and a fixed frequency f_g, which are sent to the input of the transmitter under test; selecting at the transmitter output the two output waves corresponding to the input wave of the same side-band; frequency shifting, filtering and detecting said output waves so as to extract therefrom a beat signal at frequency 2 f_g; comparing said beat frequency signal in a phase bridge comparator with another signal also at a frequency of 2 f_g but which is coherent with the signal at said frequency f_g; obtaining a signal at the output of said phase bridge whose voltage is a linear function of the group delay.

4,244,055

TUNER WITH PHASE LOCKED LOOP SYNTHESIZER

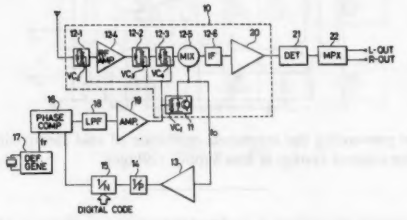
Akira Misawa, and Tatsuo Numata, both of Tokyo, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 16, 1978, Ser. No. 951,819

Claims priority, application Japan, Oct. 17, 1977, 52-123443; Oct. 31, 1977, 52-129632

Int. Cl.³ H04B *1/10, 1/26*

U.S. Cl. 455—174 **5 Claims**



1. A tuner of the phase-locked loop type and comprising: a digital memory board with station data stored thereon at discrete data positions; means for scanning said board and delivering a digital output indicative of said station data; a voltage-controlled variable frequency oscillator for generating a local frequency corresponding to the local frequency signal of a selected station; a programmable frequency divider for dividing the local frequency by a variable dividing ratio determined by said digital output; and means responsive to the divided frequency and to a reference frequency for producing a corresponding control voltage which is applied to said voltage controlled oscillator for determining said local frequency in dependence on said dividing ratio of said frequency divider; and muting control circuit means responsive to said digital output for muting said tuner when said scanning means is between said discrete data positions on said memory board, said muting means comprising an OR circuit responsive to said digital output to mute said tuner when said digital output does not contain said station data.

4,244,056

NOISE REDUCTION CIRCUIT

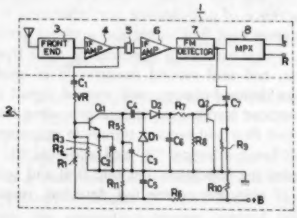
Masanori Hamada, and Sueji Kawaguchi, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1979, Ser. No. 19,840

Claims priority, application Japan, Mar. 16, 1978, 53/29256

Int. Cl.³ H04B *1/10, 15/00*

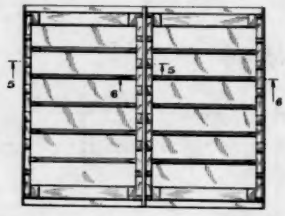
U.S. Cl. 455—213 **7 Claims**

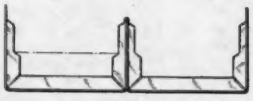


1. A noise reduction circuit for an FM radio receiver, wherein said receiver includes at least IF signal generating means for producing an IF signal from a received incoming

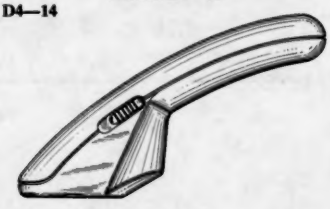
signal and FM detector means coupled to receive said IF signal, comprising a capacitor and a variable resistor means, said capacitor and said variable resistor means being connected in series between an output of said FM detector means and an earth potential point, and control means for continuously controlling the resistance of said variable resistor means in accordance with the level of said IF signal and thereby for continuously varying attenuation of a high frequency component of the incoming signal in response to the strength of the incoming signal to reduce noise contained therein.

257,746
TRAY INSERT FOR TAPE CARTRIDGES AND TAPE CASSETTES
Vaughn Aprahamian, Rego Park, N.Y., assignor to Le-Bo Products Company, Inc., Maspeth, N.Y.
Filed Jul. 31, 1978, Ser. No. 929,419
Term of patent 14 years
Int. Cl. D3—*02*; D6—*04*
U.S. Cl. D3—35

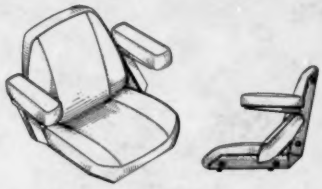




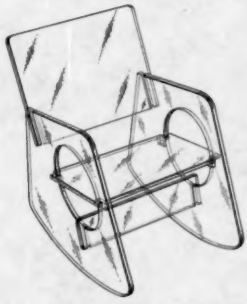
257,747
SKIN TREATMENT TOOL
Fran MacGregor, New Britain, Conn., assignor to Clairol Incorporated
Division of Ser. No. 852,388, Nov. 17, 1977, Pat. No. D. 254,222.
This application May 29, 1979, Ser. No. 43,062
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—14



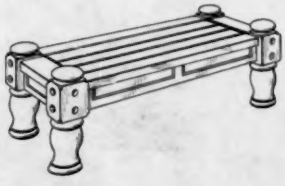
257,748
TRACTOR SEAT
Edgar J. Smith, R.R. 1, Mitchell, S. Dak. 57301
Filed May 8, 1978, Ser. No. 903,993
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



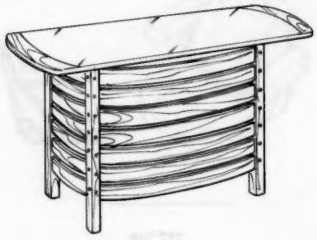
257,749
ROCKING CHAIR
Peter Davis, 14 Whale Sq., Brooklyn, N.Y. 11232
Filed Jun. 19, 1978, Ser. No. 916,573
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—49



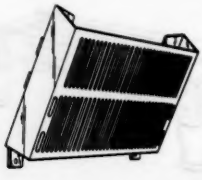
257,750
COFFEE TABLE
Lester Beall, Jr., High Point, N.C., assignor to Crestline Furniture Co., Inc., New York, N.Y.
Filed Oct. 25, 1977, Ser. No. 845,247
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



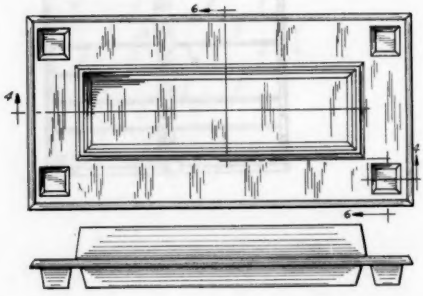
257,751
TABLE
Jobie G. Redmond, P.O. Box 1133, High Point, N.C. 27260
Filed Nov. 8, 1978, Ser. No. 958,842
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179

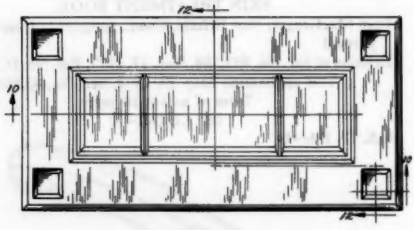


257,752
ATTACHMENT FOR VERTICALLY MOUNTED FILE HOLDER
Donald B. Rabig, Elizabeth, N.J., assignor to Borden, Inc., Columbus, Ohio
Filed Jan. 14, 1980, Ser. No. 111,875
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—191



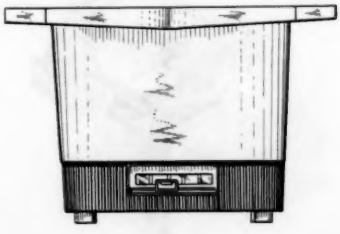
257,753
SERVING TRAY
Alwin J. Stahel, II, New Brighton, Minn., assignor to Princeton Industries Corporation, Princeton, Ind.
Filed Aug. 2, 1978, Ser. No. 930,543
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—37





257,754
COMBINED DECANTER AND STOPPER
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc.
Filed Oct. 27, 1978, Ser. No. 955,424
Term of patent 14 years
Int. Cl. D07—*01, 06*
U.S. Cl. D7—52

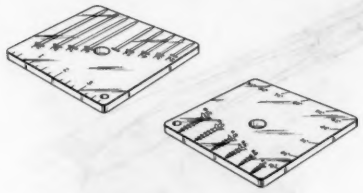
257,755
DEEP FRYER
William J. Rakocy, Nutley, and Masao Tsuji, North Plainfield, both of N.J., assignors to North American Philips Corporation, New York, N.Y.
Filed Dec. 7, 1977, Ser. No. 858,365
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94



257,756
BARBECUE TOOL
Logan W. Johnson, 7116 Shannon Dr., Edina, Minn. 55435
Filed Mar. 13, 1979, Ser. No. 20,176
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—105

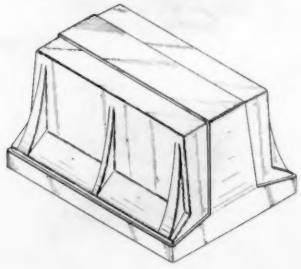
257,757
ARTICLE OF FLATWARE
Peter J. Acker, 2418 Foxdale Ave., Oceanside, N.Y. 11572
Filed Jul. 18, 1978, Ser. No. 925,608
Term of patent 14 years
Int. Cl. D07—*03*
U.S. Cl. D7—143

257,758
COMBINED NAIL-SCREW SHIELD AND MEASURING INSTRUMENT
Robert J. Limacher, P.O. Box 2568, Aspen, Colo. 81611
Filed Sep. 1, 1978, Ser. No. 939,135
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14

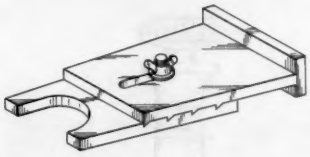


257,759
TORQUE TYPE HAND SCREWDRIVER
Dara Peterson, 1722-176 Oro Vista Rd., San Diego, Calif. 92154
Filed Feb. 8, 1978, Ser. No. 876,189
Term of patent 14 years
Int. Cl. D08—*04*
U.S. Cl. D8—85

257,760
COVER FOR FLOOR OUTLET
Thomas J. Sotolongo, Clearwater Beach, Fla., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Jul. 26, 1979, Ser. No. 61,143
Term of patent 14 years
Int. Cl. D8—*09*; D13—*03*
U.S. Cl. D8—353



257,761
FURNITURE STOP
Anna Abel, 4825-200A St., Langley, British Columbia, Canada (V3A 5W8)
Filed Aug. 22, 1978, Ser. No. 936,579
Term of patent 14 years
Int. Cl. D8—*09, 99*
U.S. Cl. D8—402



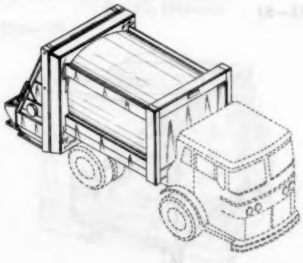
257,762
DECANTER
David W. Y. Yeung, Tung Chai Bldg., 7th Fl., 88-90 Wellington St., Hong Kong, Hong Kong
Filed Jan. 30, 1978, Ser. No. 873,110
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—307

257,763
BOTTLE
Orlando D. Cambio, Jr., Bristol, Wis., assignor to Respiratory Care, Inc., Arlington Heights, Ill.
Filed Jan. 5, 1978, Ser. No. 867,421
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370

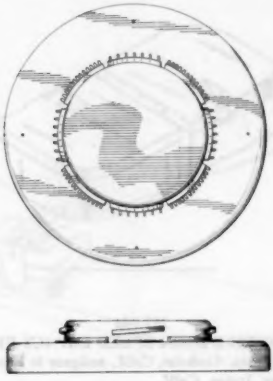
257,764
COMBINED JAR AND CLOSURE
Hajime Tajima, Tokyo, Japan, assignor to Ajinomoto General Foods, Inc., Tokyo, Japan
Filed Oct. 25, 1977, Ser. No. 845,086
Claims priority, application Japan, Jul. 12, 1977, 52-27242
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—399

257,765
BILL DETECTOR
Jacob Schachter, 135 New York Ave., Huntington, N.Y. 11743
Filed May 7, 1979, Ser. No. 36,536
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46

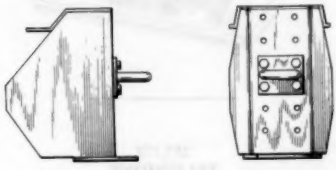
257,766
REFUSE TRUCK BODY
Fred T. Smith, Palos Verdes Peninsula, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.
Filed Feb. 8, 1978, Ser. No. 876,190
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—15



257,767
DOLLY PLATE FOR A REFUSE CONTAINER
Dale T. Maza, and Glen E. Tomblin, both of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Mar. 8, 1978, Ser. No. 884,714
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—31

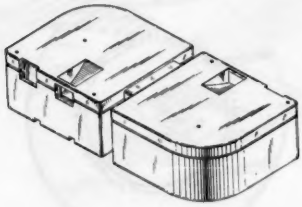


257,768
TRAILER HITCH
Edward J. Lazzeroni, Racine, Wis., assignor to Miller Tilt-Top Trailer, Company, Milwaukee, Wis.
Filed Sep. 29, 1978, Ser. No. 947,244
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—162



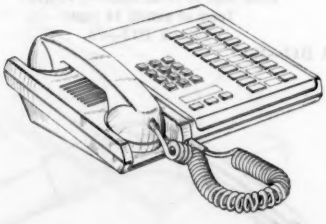
257,769
PIVOTAL SUPPORT FOR A WIND DEFLECTOR BLADE
Charles E. Ingram, Warren, Mich., assignor to Four Star Corporation
Filed Sep. 5, 1978, Ser. No. 939,907
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—181

257,770
DOUBLE VIEWER CARTRIDGE
Donald I. Loofbourow, Canby, Oreg., assignor to GAF Corporation, New York, N.Y.
Filed Sep. 22, 1978, Ser. No. 944,908
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—11

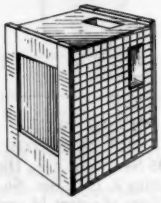


257,771
SEND/RECEIVE HIGH SPEED IMPACT PRINTER
Dayton O. Dargatz, Anaheim, Calif., assignor to Plessey Peripheral Systems, Irvine, Calif.
Filed Nov. 2, 1978, Ser. No. 957,070
Term of patent 14 years
Int. Cl. D18—*01, 02*
U.S. Cl. D14—50

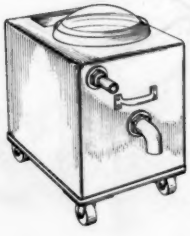
257,772
TELEPHONE
Yoshifumi Fukutani, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan
Filed Jun. 12, 1978, Ser. No. 914,579
Claims priority, application Japan, Dec. 12, 1977, 52-48681
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



257,773
PROJECTION TELEVISION CONSOLE
Ronald L. Loper, Manhattan Beach; Robert H. Norwalt, Northridge; Rolf D. Ulrich, Van Nuys, and Theodore A. Flynn, Toluca Lake, all of Calif., assignors to Sega Enterprises, Inc.
Filed Apr. 27, 1978, Ser. No. 900,676
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—79



257,774
CARPET AND RUG CLEANER
Donald F. Pierson, 813 E. Irvington, South Bend, Ind. 46614
Filed Jun. 7, 1978, Ser. No. 913,452
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—53



257,775

FLUID DISTRIBUTING MANIFOLD

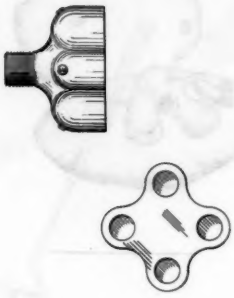
Paul E. Allen, Sandy Hook, Conn., assignor to Logic Devices, Inc.

Filed Nov. 23, 1977, Ser. No. 854,167

Term of patent 14 years

Int. Cl. D15—*99*

U.S. Cl. D15—199



257,776

PORTABLE MOVIE PROJECTOR

Naokuni Sato; Toru Onishi, and Daisuke Ishiguro, all of Kasai, Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi, Japan

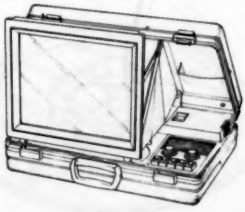
Filed Apr. 19, 1978, Ser. No. 897,815

Claims priority, application Japan, Nov. 30, 1977, 52-47641

Term of patent 14 years

Int. Cl. D16—*02*

U.S. Cl. D16—18



257,777

LETTER STAMPING MACHINE

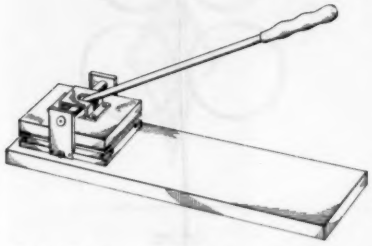
Robert J. Eichenberg, and La Dorna E. Eichenberg, both of 911 Baywood Dr., Newport Beach, Calif. 92660

Filed Jul. 28, 1977, Ser. No. 819,838

Term of patent 14 years

Int. Cl. D18—*02*

U.S. Cl. D18—15



257,778

BASE FOR A DESK PEN SET AND CALENDAR OR SIMILAR ARTICLES

William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc.

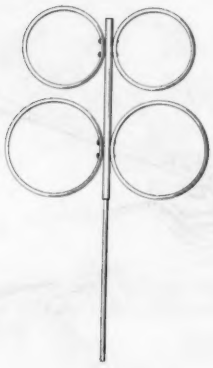
Filed May 18, 1978, Ser. No. 907,309

Term of patent 14 years

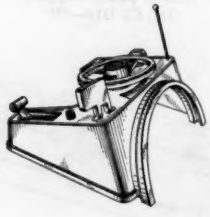
Int. Cl. D19—*99*

U.S. Cl. D19—99

257,779
DISC TARGET
Leo W. Sippola, 10614 W. Villard Ave., Milwaukee, Wis. 53225
Filed Oct. 25, 1978, Ser. No. 954,446
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—5



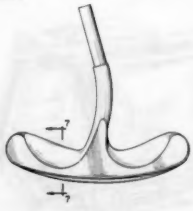
257,780
SIMULATIVE DRIVING TOY
Manfred Strauss, Randolph, N.J., assignor to Shelcore, Inc., New York, N.Y.
Filed Oct. 10, 1978, Ser. No. 950,173
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—142



257,781
STUFFED TOY CLAM OR SIMILAR ARTICLE
Gail G. Inzerillo, 349 O'Connor Rd., North Babylon, N.Y. 11703, and Kathleen A. Williams, 93 E. 13th St., Huntington Station, N.Y. 11746
Filed Feb. 1, 1979, Ser. No. 8,702
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—157

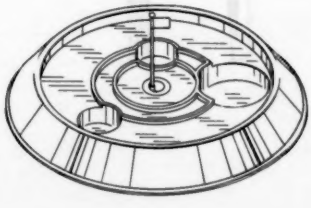
257,782
SLOTTED GOLF PUTTER HEAD
Floyd V. Bernhardt, 5532 N. High School Rd., Indianapolis, Ind. 46254
Filed Mar. 28, 1979, Ser. No. 24,793
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217

257,783
GOLF PUTTER HEAD
Floyd V. Bernhardt, 5532 N. High School Rd., Indianapolis, Ind. 46254
Filed Mar. 28, 1979, Ser. No. 24,794
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217



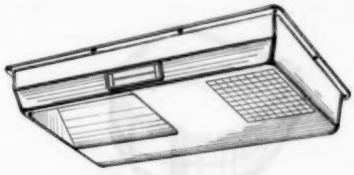
257,784
PUTTER
Edward L. Forys, Box 113, Monrovia, Calif. 91016, and Roy K. Fujitaki, Los Angeles County, Calif., assignors to by said Roy K. Fujitaki said Edward L. Forys
Filed Oct. 16, 1978, Ser. No. 951,851
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219

257,785
RECEIVER FOR A GOLF BALL CHIPPING GAME
Otto G. Arndt, and James J. Arndt, both of 1708 S. Dahlia St., Denver, Colo. 80222
Filed Sep. 18, 1978, Ser. No. 944,609
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—234

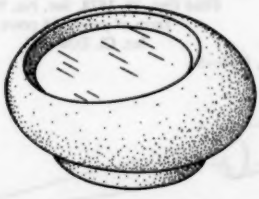


257,786
DUAL SURFBOARD FIN OR THE LIKE
Charles B. Vann, 531 S. 1st St., Jacksonville Beach, Fla. 32250
Filed Feb. 27, 1978, Ser. No. 881,883
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—237

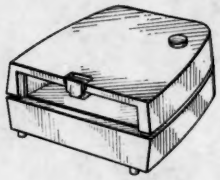
257,787
VEHICLE ROOF MOUNTED AIR CONDITIONER AIR OUTLET PANEL
Joseph M. Armbruster, Lighthouse Point, Fla., assignor to Sheller-Globe Corporation, Toledo, Ohio
Filed Aug. 1, 1978, Ser. No. 929,992
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—142



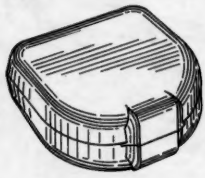
257,788
DISPENSER FOR VAPORIZABLE SUBSTANCE
John I. Suhajda, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.
Filed Mar. 3, 1978, Ser. No. 883,120
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150



257,789
CONTACT LENS STERILIZER UNIT
Michael D. Thomas, Arab, Ala., and Francis E. Ryder, Barrington, Ill., assignors to Ryder International Corporation, Arab, Ala.
Filed Mar. 24, 1978, Ser. No. 889,826
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—9

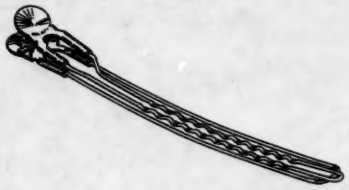


257,790
DENTAL APPLIANCE CARRYING CASE
Peter C. Kesling, Green Acres, LaPorte, Ind. 46350
Filed Jun. 2, 1978, Ser. No. 912,063
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D24—10

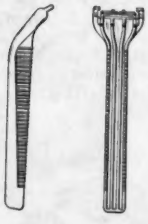


257,791
PIPETTE
James E. Parker, Long Beach, Calif., assignor to ICL/Scientific, Fountain Valley, Calif.
Filed Oct. 20, 1978, Ser. No. 953,837
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—55

257,792
HAIR CONTROL CLIP
Chen K. Chao, 206-8 Tsat-Tse Mui Rd., North Point, Hong Kong BCC, Hong Kong
Filed Mar. 1, 1979, Ser. No. 9,550
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—40



257,793
RAZOR
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 9, 1979, Ser. No. 19,133
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—48

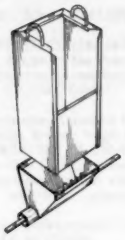


257,794

AUTOMATIC FEEDER FOR LIVESTOCK

Ernst G. Gunnarsson, Severin Cavallinsgatan 7, S-235 00 Vellinge, Sweden

Filed Nov. 13, 1978, Ser. No. 960,268
Claims priority, application Sweden, May 12, 1978, 78-1271
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13

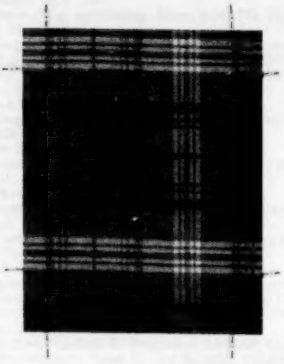


257,795

TEXTILE FABRIC

David Doig, Silk Willoughby, England, assignor to The Scotch House Limited, London, England

Filed Dec. 19, 1978, Ser. No. 971,102
Claims priority, application United Kingdom, Jul. 13, 1978, 513520/78
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D92—1 AA



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF JANUARY, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Chance Company: *See*—
Myers, Franklin D.; and McKelvy, Marvin D., 4,242,930, Cl. 81-474.000.

A. L. Lee Corporation: *See*—
Lee, Arthur L.; and Coval, Arthur B., 4,243,126, Cl. 192-2.000.
Lee, Arthur L.; and Coval, Arthur B., 4,243,127, Cl. 192-4.00A.

A. Raymond: *See*—
Kuttler, Otto; and Muller, Klaus, 4,243,086, Cl. 411-174.000.

Abbott Laboratories: *See*—
Genese, Joseph N., 4,243,031, Cl. 128-214.00E.

Abele, Werner; and Grossa, Mario, to Du Pont de Nemours, E. I., and Company. Negative tonable systems containing dihydropyridines and photooxidants. 4,243,741, Cl. 430-270.000.

Aberle, Lothar: *See*—
Hillenkamp, Franz; Kaufmann, Raimund; Unsold, Eberhard; Nietsche, Rainer; Wechsung, Reiner; Vogt, Henning; Bank, Walter; and Aberle, Lothar, 4,243,887, Cl. 250-423.00P.

Abolins, Visvaldis; and Lee, Gim F., Jr., to General Electric Company. Thermoplastic molding compositions of vinyl aromatic compound α,β-unsaturated cyclic anhydride copolymers. 4,243,766, Cl. 525-92.000.

Abraham, Fayez F., to Tyler Refrigeration Corporation. Glass door merchandiser. 4,242,882, Cl. 62-256.000.

ACF Industries, Incorporated: *See*—
Holt, Jan D.; and Neff, Robert K., 4,242,966, Cl. 105-182.00R.
Williamson, Raymond E., 4,242,866, Cl. 60-290.000.

Ackeret, Peter, to Licinvest AG. Container for photographic prints. 4,242,820, Cl. 40-513.000.

Ackeret, Peter, to IDN Inventions and Development of Novelties AG. Stacking device. 4,243,279, Cl. 312-107.000.

Ackley, David A.; Rogers, Gerald D.; Macourek, Peter H.; Guttag, Karl M.; and Chang, Ki Suk, to Texas Instruments Incorporated. Video display processor. 4,243,984, Cl. 340-703.000.

Actus, Inc.: *See*—
Avera, C. Bert, Jr., 4,243,884, Cl. 250-361.00R.

Adachi, Keiichi: *See*—
Nakamura, Kotaro; Adachi, Keiichi; and Ogawa, Akira, 4,243,747, Cl. 430-551.000.

Adsara, Jorge D.; Casadio, Silvano; Ribalta, Jose M. B.; and Bruseghini, Leonida. S-(3-Methyl-2-butenyl)cysteine. 4,243,679, Cl. 424-319.000.

Aeberli, Hans, to Von Roll AG. Waste incinerator exhaust gas treatment and apparatus. 4,243,635, Cl. 422-176.000.

Aerodyne Development Corporation: *See*—
Gordon, Mack, 4,243,715, Cl. 428-263.000.

Aerovironment Inc.: *See*—
Tombach, Ivar, 4,242,908, Cl. 73-421.50R.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See*—
Chronberg, Sten, 4,243,378, Cl. 432-11.000.

AGFA-Gevaert, A.G.: *See*—
Dobler, Rudolf; and Weber, Klaus, 4,243,891, Cl. 250-571.000.

Aginsky, Yacov. Emergency tourniquet. 4,243,039, Cl. 128-327.000.

Agouridis, Dimitrios C.; and Fox, Richard J., to United States of America, Energy. Cadmium telluride photovoltaic radiation detector. 4,243,885, Cl. 250-370.000.

Agricultural Research and Development Inc.: *See*—
Laurenz, Frank R., 4,243,137, Cl. 198-748.000.

Ahmed, Myrna M.: *See*—
Ahmed, Nazeer; and Ahmed, Myrna M., 4,242,897, Cl. 72-262.000.

Ahmed, Nazeer; and Ahmed, Myrna M. Extrusion machine and method of continuous tubular extrusion. 4,242,897, Cl. 72-262.000.

Ahn, Kie Y.; and Cox, Daniel E., to International Business Machines Corporation. Modification of etch rates by solid masking materials. 4,243,476, Cl. 156-643.000.

Aikoh Co. Ltd.: *See*—
Takashima, Masaru, 4,243,210, Cl. 266-220.000.

Ajinomoto Company Incorporated: *See*—
Yoshida, Zen-ichi; Yoneda, Shigeo; Murata, Hideki; Yasuda, Yutaka; and Nagakura, Saburo, 4,243,601, Cl. 260-396.00N.

Akasaki, Katsuyuki: *See*—
Ishihara, Eisuke; Yonehara, Hiroshi; Akasaki, Katsuyuki; Minowa, Masao; and Kobayashi, Katsumi, 4,243,661, Cl. 424-117.000.

Akashi, Goro: *See*—
Watanabe, Kenji; and Akashi, Goro, 4,242,783, Cl. 29-132.000.

Akima, Tosio; Kudou, Etsuzaburo; Kaneyasu, Tetsuo; and Kochi, Hiromi, to Hitachi Chemical Company, Ltd. Process for producing powdered copolymers of ethylenically unsaturated compound and maleic anhydride or an ester thereof. 4,243,784, Cl. 526-88.000.

Akimura, Yoshitaka: *See*—
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Hirano, Shigeo, 4,243,739, Cl. 430-266.000.

Aktiebolaget Bofors: *See*—
Broberg, Hans; and Douren, Lars, 4,243,477, Cl. 159-13.00A.

Aktiebolaget Electrolux: *See*—
Blomberg, Peter E., 4,242,879, Cl. 62-148.000.
Sten, Nathan, 4,243,893, Cl. 290-1.00B.

Aktiebolaget Multilab: *See*—
Lenart, Tibor, 4,243,929, Cl. 320-23.000.

Aktiebolaget SKF: *See*—
Persson, Stig; and Ostling, Sture, 4,243,276, Cl. 308-187.000.

Akutsu, Mitsuo: *See*—
Minagawa, Motonobu; Akutsu, Mitsuo; Fujiwara, Hiroshi; and Kashiki, Masayuki, 4,243,581, Cl. 260-45.85S.

Albarello, Alain, to Thomson-CSF. Multiplexed filtering device. 4,244,030, Cl. 364-825.000.

Alberto-Culver Company: *See*—
Balingit, Angelina T.; and Scafidi, Anthony A., 4,243,659, Cl. 424-70.000.

Albright & Wilson Ltd.: *See*—
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Alden Research Foundation: *See*—
Leighton, Robert D., 4,243,291, Cl. 339-184.00M.

Aldridge, Frederick A.: *See*—
Schertz, Burtron D.; and Aldridge, Frederick A., 4,243,954, Cl. 331-117.00R.

Alexandrov, Boris I.: *See*—
Lipets, Adolf U.; Krasnov, Boleslav M.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; Galuskin, Vadim B.; Lafa, Jury I.; Alexandrov, Boris I.; and Gromov, Gennady V., 4,243,096, Cl. 165-134.0DP.

Alexeev, Albert V.: *See*—
Ushakov, Vladimir F.; Pergunov, Alexandr I.; Alexeev, Albert V.; Maslennikov, Pavel N.; and Seljutin, Vladimir I., 4,242,841, Cl. 51-263.000.

Alferness, Rodney C., to Bell Telephone Laboratories, Incorporated. Polarization-independent optical directional coupler switch/modulator. 4,243,295, Cl. 350-96.140.

Ali, Wahid R., to Texaco Trinidad, Inc. Process for preparing overbased naphthenic micronutrient compositions. 4,243,676, Cl. 424-294.000.

Allegro, Joseph. Heat transfer bed assemblies. 4,242,766, Cl. 5-422.000.

Allemann, Werner: *See*—
Heim, Peter; Borer, Karl; and Allemann, Werner, 4,243,778, Cl. 525-454.000.

Alley, Bernard J.; Dake, James D.; and Dykes, Hiram W. H., to United States of America, Army. Ballistic modifiers, synthesis . . . propellants. 4,243,444, Cl. 149-98.000.

Allibert Exploitation, Societe Anonyme: *See*—
Deconinck, Didier, 4,243,280, Cl. 312-140.000.
Mathey, Jean M., 4,243,446, Cl. 156-62.400.

Allied Water Corporation: *See*—
Pelmulder, John P., 4,243,523, Cl. 210-652.000.

Allred, Victor D., to Marathon Oil Company. Process for suppressing carbonate decomposition in vapor phase water retorting. 4,243,511, Cl. 208-11.00R.

Almgren, Bertil: *See*—
Gunne, Ingemar; and Almgren, Bertil, 4,243,150, Cl. 215-247.000.

Alshuk, Thomas J. Rolling mill gauge control system. 4,244,025, Cl. 364-472.000.

Altex Scientific, Inc.: *See*—
Shackelford, Carl L., 4,243,071, Cl. 137-625.460.

Aluminum Company of America: *See*—
Knepp, James E.; Johnston, William G.; and Jursich, Myron J., 4,243,537, Cl. 252-49.300.

AM International, Inc.: *See*—
Swift, William R.; and LeFevre, Clyde E., 4,242,819, Cl. 40-513.000.

Amana Refrigeration, Inc.: *See*—
Hays, Herbert G., 4,243,176, Cl. 237-7.000.

Amax Inc.: *See*—
Sherwood, William G.; Hodges, Donald R.; and Nikolic, Cvetko, 4,243,498, Cl. 204-112.000.

Amchem Products, Inc.: *See*—
Hall, Wilbur S.; and Leister, Harry M., 4,243,704, Cl. 427-327.000.

Amdahl Corporation: *See*—
Anderson, David L.; and Bishop, Richard L., 4,244,019, Cl. 364-200.000.

Amemori, Hiroyuki; and Nishiyama, Shigeru, to Tokico Ltd. Turbine meter. 4,242,916, Cl. 73-861.830.

American Cyanamid Company: *See*—
Rosensaft, Michael N.; and Webb, Richard L., 4,243,775, Cl. 525-415.000.
Shepherd, Robert G., 4,243,609, Cl. 564-91.000.
Wissner, Allan; Weiss, Martin J.; and Bernady, Karel F., 4,243,817, Cl. 560-62.000.

American Dental Association Health Foundation: *See—*
Argentar, Harold, 4,243,763, Cl. 525-27.000.
American Hospital Supply Corporation: *See—*
Choksi, Pradip V.; Michael, Kenneth R.; and Penny, William H., 4,243,080, Cl. 141-2.000.
American Optical Corporation: *See—*
Buhler, Rato R., 4,243,304, Cl. 351-27.000.
American Screen Printing Equipment Company: *See—*
Bubley, Henry J.; Green, Melvin E.; and Iaccino, Alex, 4,242,956, Cl. 101-123.000.
American Standard Inc.: *See—*
Parkison, Richard G., 4,243,063, Cl. 137-100.000.
Wright, Raymond C., deceased, 4,243,273, Cl. 303-22.00A.
American Thread Company, The: *See—*
Woodhead, Robert G., 4,243,145, Cl. 211-49.00D.
AMF Incorporated: *See—*
Chiles, Robert E., III, 4,244,021, Cl. 364-413.000.
Amis, Andrew A.; and Miller, James H., to University of Leeds Industrial Service Ltd. Elbow prosthesis. 4,242,758, Cl. 3-1.910.
Amos, Charles R.: *See—*
Reynolds, Jack B.; and Amos, Charles R., 4,243,424, Cl. 106-58.000.
AMP Incorporated: *See—*
Lucius, John E.; and Ritchie, Leon T., 4,243,288, Cl. 339-99.00R.
Analogic Corporation: *See—*
Rollman, Charles D., 4,243,933, Cl. 324-60.0CD.
Anchor Products Company: *See—*
Thrun, Robert H., 4,243,140, Cl. 206-380.000.
Anderson, Alexander B., to Kangol Magnet Limited. Seat belt system and connector therefor. 4,243,266, Cl. 297-483.000.
Anderson, Arthur W.: *See—*
Israilides, Cleanthes; Han, Youn W.; and Anderson, Arthur W., 4,243,686, Cl. 426-53.000.
Anderson, David L.; and Bishop, Richard L., to Amdahl Corporation. Data processing system including a program-executing secondary system controlling a program-executing primary system. 4,244,019, Cl. 364-200.000.
Anderson, Harold E. Energy conserving security shutters. 4,242,836, Cl. 49-63.000.
Anderson, J. Edward C., to Marquette Metal Products Company. Bi-directional rotary impact tool for applying a torque force. 4,243,109, Cl. 173-93.500.
Anderson, Robert N., to Parlee-Anderson Corporation. Reduction of metal sulfides. 4,243,411, Cl. 75-69.000.
Andersson, Nils-Eric; and Sinner, Bengt, to ASEA Aktiebolag. Energy-efficient fluid medium pumping system. 4,243,892, Cl. 290-1.00R.
Andrews, George S.: *See—*
Lamberty, Bernard J.; and Andrews, George S., 4,243,993, Cl. 343-895.000.
Annal, Peter R.: *See—*
York, Kenneth L.; Annal, Peter R.; and Legory, John E., 4,244,049, Cl. 371-38.000.
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Wendt, Hans; and Kapp, Joachim F., to Schering Aktiengesellschaft. Novel corticoids. 4,243,664, Cl. 424-243.000.
Anschutz, Elfi. Firearm. 4,242,826, Cl. 42-73.000.
Antipov, Georgy A.: *See—*
Galimov, Anas G.; Gelfand, Mikhail L.; Goldshtein, Boris G.; Kilin, Viktor E.; Sutyagin, Oleg Y.; Tsipenjuk, Yakov I.; Antipov, Georgy A.; and Yankovsky, Oleg A., 4,243,108, Cl. 173-93.000.
Anton, Nicholas T., to Wen Products, Inc. Device for sharpening saw chains. 4,242,926, Cl. 76-25.00A.
Antos, George J., to UOP Inc. Nonacidic multimetallic catalytic composite. 4,243,558, Cl. 252-466.00B.
Antos, George J., to UOP Inc. Hydrocarbon dehydrogenation with a nonacidic multimetallic catalytic composite. 4,243,826, Cl. 585-434.000.
Apple, Wayne R. Apparatus for automatic ventilation of the lungs using dual potentiometers to vary the power to an electric motor to control the inhalation/exhalation ratio. 4,243,029, Cl. 128-204.210.
Arai, Toshio, to Kabushiki-Kaisha Dentronics. Dental hand engine. 4,243,388, Cl. 433-27.000.
Arai, Yoshio. Seal ring having a tapered surface, and a sealing device. 4,243,233, Cl. 277-81.00P.
Arbib, Gordon F.; and Baranick, Mervin, to Multicore Solders Limited. Coated soft solder bar or ingot. 4,243,440, Cl. 148-23.000.
Ares, Inc.: *See—*
Warren, John B.; Robinson, Ernest Y.; and Kazanjy, Robert P., 4,242,964, Cl. 102-275.000.
Argentar, Harold, to American Dental Association Health Foundation. Tertiary aromatic amine accelerators in acrylic resin. 4,243,763, Cl. 525-27.000.
Arita, Isao: *See—*
Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, 4,243,308, Cl. 354-60.00E.
Armantrout, Robert J., to United States of America, Navy. Pre-solution preparation of double base propellant binder. 4,243,442, Cl. 149-19.920.
Armbruster, Gerhard; Kleider, Albert; and Vogel, Eberhard, to Robert Bosch GmbH. High-speed power tool. 4,242,839, Cl. 51-170.0MT.
Arnaud, Claude J.; Quemner, Jean M.; and Roche, Gaston P., to Societe Anonyme de Telecommunications. Volatile liquid supply equipment and processes and apparatus for introducing volatile cross-linking agents into polyolefin compounds and for the extrusion of cross-linking polyolefin compounds. 4,243,773, Cl. 525-387.000.
Arndt, Friedrich: *See—*
Kruger, Hans-Rudolf; Arndt, Friedrich; and Rusch, Reinhart, 4,243,404, Cl. 71-73.000.
Schmidt, Erich; and Arndt, Friedrich, 4,243,409, Cl. 71-92.000.
Arnold, Gordon B.: *See—*
Sandidge, David H., 4,243,973, Cl. 340-148.000.
Arnstrom, Anders P.; Dahlgren, Lennart K.; and Dahlgren, Britt I. Connecting device. 4,242,829, Cl. 46-91.000.
Arp, David F.: *See—*
Pariani, Ronald L.; and Arp, David F., 4,243,209, Cl. 266-219.000.
Asahi-Dow Limited: *See—*
Yasujima, Akitaka; Shiratori, Naoyuki; and Ishikawa, Shingo, 4,243,882, Cl. 250-339.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, 4,243,532, Cl. 210-196.000.
Ueda, Takeshi; Kinoshita, Shozo; Sasaguri, Kiichiro; and Kobayashi, Hidehiko, 4,243,746, Cl. 430-346.000.
Asano, Kiro; Saito, Tsuyoshi; Hatanaka, Masayoshi; and Ikeda, Susumu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Plant-virus controlling agent. 4,243,662, Cl. 424-180.000.
ASEA Aktiebolag: *See—*
Andersson, Nils-Eric; and Sinner, Bengt, 4,243,892, Cl. 290-1.00R.
Hanas, Bertil, 4,243,092, Cl. 164-49.000.
Sahlin, Thorbjorn, 4,243,078, Cl. 141-1.000.
Ashida, Sakichi: *See—*
Takeuchi, Hiroshi; Ito, Yukio; Jyomura, Shigeru; Yamashita, Kunio; Nagatsuma, Kazuyuki; Ashida, Sakichi; and Ishii, Mitsuru, 4,243,541, Cl. 252-62.900.
Ashland Oil, Inc.: *See—*
Throckmorton, Peter E.; Sitz, Gary E.; and Grimm, Robert A., 4,243,612, Cl. 568-431.000.
Ward, Clifford, 4,243,551, Cl. 252-428.000.
Ateliers des Charmilles, S.A.: *See—*
Wyss, Georges, 4,243,863, Cl. 219-69.00V.
Atkinson, Gaylen V., to Mark Controls Corporation. Pneumatic optimizer. 4,243,173, Cl. 236-46.00R.
Atlantic Richfield Company: *See—*
Burk, Emmett H.; Yoo, Jin S.; Karch, John A.; and Sun, Jui-Yuan, 4,243,550, Cl. 252-412.000.
Atlas Copco Aktiebolag: *See—*
Schoeps, Knut C., 4,243,129, Cl. 192-56.00C.
Ato Chimie: *See—*
Kornbaum, Simon, 4,243,627, Cl. 264-171.000.
Auburn Enterprises, Inc.: *See—*
Olsen, C. Eric, 4,243,047, Cl. 128-751.000.
Auckenthaler, Robert, to SIG - Schweizerische Industrie-Gesellschaft. Apparatus for making packaging sleeves. 4,242,949, Cl. 493-295.000.
Audi NSU Auto Union Aktiengesellschaft: *See—*
Freyer, Erwin; Steinwart, Johannes; and Will, Peter, 4,243,002, Cl. 123-325.000.
Grossmann, Holger, 4,242,950, Cl. 98-2.000.
Auger, Suzanne M.: *See—*
Worrall, James D.; and Auger, Suzanne M., 4,243,713, Cl. 428-245.000.
Aulich, Hubert; Auracher, Franz; and Witte, Hans H., to Siemens Aktiengesellschaft. Optical unit having a longitudinal side coupling zone. 4,243,296, Cl. 350-96.150.
Aument, Patrick E.: *See—*
de la Burde, Roger Z.; and Aument, Patrick E., 4,243,056, Cl. 131-140.00B.
Auracher, Franz: *See—*
Aulich, Hubert; Auracher, Franz; and Witte, Hans H., 4,243,296, Cl. 350-96.150.
Automatik Apparate-Machinenbau H. Hench GmbH: *See—*
Hench, Hans H. W., 4,243,181, Cl. 241-142.000.
Automotive Products Limited: *See—*
Young, Alastair J., 4,243,272, Cl. 303-22.00R.
Avera, C. Bert, Jr., to Actus, Inc. Probe assembly. 4,243,884, Cl. 250-361.00R.
Avery International Corporation: *See—*
Van Arnam, Donald E., 4,243,618, Cl. 264-1.000.
Azuma, Hideo: *See—*
Miyakoshi, Isamu; Ito, Kenji; Azuma, Hideo; Kitakaze, Fukuzo; Tomotaki, Takamichi; and Takehara, Yasuo, 4,243,132, Cl. 193-40.000.
Azuma, Ichiro; and Yamamura, Yuichi. Glycolipid compositions for transplanted tumor immunotherapy. 4,243,663, Cl. 424-181.000.
Azuma, Makoto; and Nakagawa, Akio, to Tokyo Shibaura Electric Co., Ltd. Gate turn-off thyristor. 4,243,999, Cl. 357-38.000.
B.B.M. S.A.: *See—*
Bo, Ermanno, 4,242,986, Cl. 122-33.000.
B. F. Goodrich Company, The: *See—*
Gilles, Jack C., 4,243,789, Cl. 526-263.000.
Backhaus, Hans-Gerd: *See—*
Scholz, Hansjugen; Backhaus, Hans-Gerd; and Brambilla, Luigi, 4,243,248, Cl. 280-735.000.
Baggaley, Keith H., to Beecham Group Limited. 2-Substituted benzisothiazolones. 4,243,669, Cl. 424-263.000.
Bahrs, Lutje-Wilhelm: *See—*
Pruss, Hans-Dieter; and Bahrs, Lutje-Wilhelm, 4,243,684, Cl. 426-40.000.
Bailey, John M., to Caterpillar Tractor Co. Dual phase fuel vaporizing combustor. 4,242,863, Cl. 60-39.060.
Bailey, William D., to Stimtech, Inc. Disposable electrode. 4,243,052, Cl. 128-798.000.

Baker, Dorsey L.; and Sedy, Josef, to Crane Packing Co. Low energy tandem seal. 4,243,230, Cl. 277-3.000.

Balaban, Alvin R.; and Steckler, Steven A., to RCA Corporation. Voltage controlled oscillator presenting high impedance to parallel resonant tank circuit. 4,243,953, Cl. 331-117.00R.

Balasubramanyan, Sugavanam; and Shephard, Margaret C., to Imperial Chemical Industries Limited. Fungicidal compounds. 4,243,405, Cl. 71-76.000.

Balestrini, Augusto, to Centro Ricerche Fiat S.p.A. Method of recovering polyols from scrap polyurethane foam. 4,243,560, Cl. 260-2.300.

Balingit, Angelina T.; and Scafidi, Anthony A., to Alberto-Culver Company. Compositions for improving hair body and method of use. 4,243,659, Cl. 424-70.000.

Balla, Jozsef: *See—*
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefko, Bela; and Kis-Tamas, Attila, 4,243,660, Cl. 424-84.000.

Ballard, Donald M. Holder. 4,242,817, Cl. 40-152.100.

Bally Manufacturing Corporation: *See—*
Grabel, Irwin J.; and Hanchar, Peter J., 4,243,222, Cl. 273-127.00R.
Nicolaus, Frank G., 4,243,133, Cl. 194-9.00R.

Balma, Giorgio. Office stapler device. 4,243,168, Cl. 227-119.000.

Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito. Direct current motor with non-superposed armature windings. 4,243,902, Cl. 310-154.000.

Baney, Ronald H.; and Harris, Len A., to Dow Corning Corporation. Flexible coating resins from siloxane resins having a very low degree of organic substitution. 4,243,721, Cl. 428-412.000.

Bank, Walter: *See—*
Hillenkamp, Franz; Kaufmann, Raimund; Unsold, Eberhard; Nietsche, Rainer; Wechsung, Reiner; Vogt, Henning; Bank, Walter; and Aberle, Lothar, 4,243,887, Cl. 250-423.00P.

Bankoku Needle Manufacturing Company Ltd.: *See—*
Takahashi, Masamitsu, 4,243,141, Cl. 206-380.000.

Banner Energy Corporation: *See—*
Christian, Miles W., 4,243,393, Cl. 44-14.000.

Baranick, Mervin: *See—*
Arbib, Gordon F.; and Baranick, Mervin, 4,243,440, Cl. 148-23.000.

Barausch, Anton: *See—*
Barausch, Victor; and Barausch, Anton, 4,242,796, Cl. 30-166.00R.

Barausch, Victor; and Barausch, Anton. Tree saw. 4,242,796, Cl. 30-166.00R.

Barber, Lois M. Finger splint. 4,243,026, Cl. 128-77.000.

Barbosa, Roosevelt N.: *See—*
Hurd, Roger B.; and Barbosa, Roosevelt N., 4,242,846, Cl. 52-71.000.

Barcus, William J.: *See—*
Hammel, Ronald O.; Barcus, William J.; and Cone, Irwin C., 4,244,011, Cl. 362-183.000.

Bares, Jaromir R.: *See—*
Kang, Eyung W.; Brandao, Ruy L.; Bares, Jaromir R.; and Payne, Delmar V., 4,243,988, Cl. 343-5.0VQ.

Barile, Conrad A.; Goth, Goerge R.; Makris, James S.; Nagarajan, Arunachala; and Raheja, Raj K., to International Business Machines Corporation. Bipolar transistor fabrication process with an ion implanted emitter. 4,243,435, Cl. 148-1.500.

Barlow, Wayne K.: *See—*
Briscoe, Ralph D.; and Barlow, Wayne K., 4,242,906, Cl. 73-73.000.

Barmore, Thomas C. Fastening device. 4,242,932, Cl. 81-437.000.

Barna, Albert N.: *See—*
Hernandez, Henry R.; Greif, Donald S.; Barna, Albert N.; and Thornton, Douglas S., 4,243,480, Cl. 162-141.000.

Barnish, Ian T.; Cross, Peter E.; and Dickinson, Roger P., to Pfizer Inc. 5-Substituted 2-pyrroleglyoxylic acids, 5-substituted 2-pyrrolylglycines and derivatives thereof. 4,243,672, Cl. 424-274.000.

Barrett, Howard G. Syringe with integral swab. 4,243,035, Cl. 128-215.000.

Barrett, Michael D.: *See—*
Hartley, David; Barrett, Michael D.; and Wainwright, Paul, 4,243,434, Cl. 148-6.15R.

Bartholic, David B., to Engelhard Minerals & Chemicals Corporation. Preparation of FCC charge from residual fractions. 4,243,514, Cl. 208-91.000.

Bartholomaus, Reiner; Bernhardt, Karl-Heinz; Eberhard, Wolfgang; Kokus, Hans-Dieter; Lembke, Herbert; and Schulte, Heinz, to G. L. Rexroth GmbH. Hydraulic positioner with feedback device. 4,242,942, Cl. 91-358.00R.

Bartl, Vaclav: *See—*
Protiva, Miroslav; Rajsner, Miroslav; Sindelar, Karel; Jilek, Jiri; Bartl, Vaclav; Metysova, Jirina; Dlabac, Antonin; Langsadl, Leon; Pomykacek, Josef; and Miksik, Frantisek, 4,243,805, Cl. 544-375.000.

Bartoli, Francesco: *See—*
Marconi, Walter; Pittalis, Francesco; Bartoli, Francesco; and Morisi, Franco, 4,243,776, Cl. 525-420.000.

BASF Aktiengesellschaft: *See—*
Hammon, Fritz; Ohlinger, Manfred; and Hartmann, Job-Werner, 4,243,059, Cl. 137-2.000.
Marx, Matthias; Nissen, Dietmar; and Jarre, Wolfgang, 4,243,755, Cl. 521-99.000.
Merger, Franz; and Nestler, Gerhard, 4,243,815, Cl. 560-25.000.
Mueller, Herbert; Huchler, Otto H.; and Hoffmann, Herwig, 4,243,799, Cl. 528-409.000.
Petersen, Harro; Fischer, Kurt; Klug, Hans; Trimborn, Werner; and Schmidt, Horst, 4,243,797, Cl. 528-239.000.

BASF Wyandotte Corporation: *See—*
Cenker, Moses; and Narayan, Thirumurti, 4,243,756, Cl. 521-125.000.
Gahmig, Herbert M., 4,243,717, Cl. 428-402.000.

Bassarutti, Alfredo: *See—*
Famos, Steno; Fasano, Fulvio; and Bassarutti, Alfredo, 4,242,933, Cl. 83-37.000.

Bastien, Jean P.: *See—*
Leroy, Pierre J.; Bastien, Jean P.; and Sprunck, Emile J., 4,243,211, Cl. 266-268.000.

Baudoin, Patrice, to Regie Nationale des Usines Renault. Hybrid transmission device of the heat engine type for automobiles and motor vehicles. 4,242,922, Cl. 74-687.000.

Baudru, Bernard: *See—*
Donnet, Jean-Baptise; Baudru, Bernard; Coudurier, Maurice; and Vrisakis, Georges, 4,243,428, Cl. 106-288.00B.

Bauer, Wolfgang O.: *See—*
Jenner, Rolf-Dieter; Schafer, Dieter; and Bauer, Wolfgang O., 4,242,802, Cl. 33-174.00B.

Bauerkemper, Michael I.: *See—*
Evers, Jack R.; and Bauerkemper, Michael I., 4,243,469, Cl. 156-583.100.

Bauman, Glenn R.: *See—*
Bodycomb, Frederick M., Jr.; and Bauman, Glenn R., 4,243,011, Cl. 125-13.00R.

Bauman, William C.: *See—*
Lee, John M.; and Bauman, William C., 4,243,555, Cl. 252-441.000.

Baumgarten, Per: *See—*
Ter-Borch, Poul E.; Baumgarten, Per; and Jorgensen, Ernst K., 4,243,522, Cl. 210-774.000.

Baxter Travenol Laboratories, Inc.: *See—*
Crockett, Thomas W.; Huehls, Patrick N.; and Slotnick, Barry G., 4,243,531, Cl. 210-188.000.

Bayer Aktiengesellschaft: *See—*
Mohring, Edgar P.; and Muller, Hanns P., 4,243,758, Cl. 521-158.000.
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; and Plempel, Manfred, 4,243,670, Cl. 424-269.000.
Sommer, Richard; Wolfrum, Gerhard; and Buttner, Gerhard, 4,243,584, Cl. 260-165.000.

BBC Brown, Boveri & Company, Limited: *See—*
Dschen, Yuan-Heng, 4,242,858, Cl. 57-58.890.

Beale, Michael H.; and MacMillan, Jake, to Imperial Chemical Industries Limited. Process for the 13-deoxygenation of a 3,13-dehydroxygibberellin. 4,243,594, Cl. 260-343.30G.

Beaver, B. Max, Jr. Lawn mower auxiliary unit with flexible drive shaft. 4,242,855, Cl. 56-13.700.

Beckerman, Howard L., to Singer Company, The. Pattern feed elongation in electronic sewing machine. 4,242,974, Cl. 112-158.00E.

Beckerman, Howard L.; Pepe, Russell J.; and Dob, Allan M., to Singer Company, The. Precise positioner of buttonhole presser foot. 4,242,976, Cl. 112-264.100.

Becton, Dickinson and Company: *See—*
Bulbenko, George F., 4,243,534, Cl. 210-656.000.
Cronenberg, Richard A., 4,243,396, Cl. 55-238.000.
DeCaprio, Vincent; and Sanderson, George, 4,243,033, Cl. 128-214.400.

Beebe, Ronald F., to Litton Systems, Inc. Pulse width modulated inverter. 4,244,015, Cl. 363-8.000.

Beecham Group Limited: *See—*
Baggaley, Keith H., 4,243,669, Cl. 424-263.000.
Goudie, Alexander C.; and Gaster, Laramie M., 4,243,682, Cl. 424-331.000.

Beecher, William H. Extracting device for removing objects from human body passages. 4,243,040, Cl. 128-328.000.

Beer, Issie M.; Zielinski, Zenon A.; and Finkel, Henry, to Beer-Zaz Building Systems, Inc. Form pan structure. 4,243,200, Cl. 249-187.00R.

Beer-Zaz Building Systems, Inc.: *See—*
Beer, Issie M.; Zielinski, Zenon A.; and Finkel, Henry, 4,243,200, Cl. 249-187.00R.

Behan, Albert S.: *See—*
Naumann, Alfred W.; and Behan, Albert S., 4,243,553, Cl. 252-439.000.
Naumann, Alfred W.; and Behan, Albert S., 4,243,554, Cl. 252-439.000.

Behrends, Bertwin E.; and Diebel, David A., to Caterpillar Tractor Co. Filter assembly with telescopic elements. 4,243,535, Cl. 210-315.000.

Beigh, Lauris L. Cabinet hinge. 4,242,773, Cl. 16-164.000.

Beitler, Richard S.: *See—*
Cornett, Jack E.; Saunders, Andrew A., Jr.; Marvin, Ira E.; and Beitler, Richard S., 4,242,864, Cl. 60-226.00R.

Belart, Juan, to ITT Industries, Inc. Standby supply system for delivering pressure fluid to a user component. 4,242,867, Cl. 60-405.000.

Bell, Robert L., to Fisher Corporation. Reclining seat latch. 4,243,264, Cl. 297-367.000.

Bell Telephone Laboratories, Incorporated: *See—*
Alferness, Rodney C., 4,243,295, Cl. 350-96.140.
Duttweiler, Donald L., 4,243,959, Cl. 333-166.000.
Logioco, John W., 4,243,834, Cl. 174-38.000.

Bemiss, James M., to Cadillac Gage Company. Air intake vent for armored vehicle. 4,242,951, Cl. 98-2.110.

Bendix Corporation, The: *See—*
Ellingson, Dennis L.; Niles, Paul D.; Normann, Richard W.; and Wilklow, Theodore L., 4,242,790, Cl. 29-879.000.
Johnson, Edwin A., 4,244,023, Cl. 364-431.000.

Kang, Eyung W.; Brandao, Ruy L.; Bares, Jaromir R.; and Payne, Delmar V., 4,243,988, Cl. 343-5.0VQ.
Keely, William A., 4,242,994, Cl. 123-339.000.
Kluger, Michael A., 4,243,124, Cl. 188-79.50P.
Weber, Robert E.; and Weissler, Harold E., II, 4,244,050, Cl. 371-66.000.

Benedikt, Walter: *See—*
Scherenberg, Dieter; and Benedikt, Walter, 4,242,990, Cl. 123-263.000.

Benjey, Robert P.: *See—*
Eshelman, Robert W.; and Benjey, Robert P., 4,242,914, Cl. 73-711.000.

Benkelman, William D.; and Carlyon, George C., to Dayco Corporation. Skylight construction and method. 4,242,849, Cl. 52-741.000.

Bennett, Virgil O.; and Wilson, George W., to Sperry Corporation. Isolation flexure for gyroscopes. 4,242,917, Cl. 74-5.500.

Berendt, Hans-Ulrich: *See—*
Schafer, Paul; Berendt, Hans-Ulrich; and Haase, Jaroslav, 4,243,390, Cl. 8-553.000.

Beretta, Angelo V., to Durastone Co. Concrete molding apparatus. 4,243,198, Cl. 249-66.00R.

Berg, James G.: *See—*
White, James L.; and Berg, James G., 4,243,794, Cl. 528-112.000.

Bergemann, Uwe: *See—*
Heeb, Dieter; Bergemann, Uwe; and Frenzel, Claus-Dieter, 4,243,548, Cl. 252-305.000.

Bergmann, Rolf: *See—*
Gericke, Rolf; Rogalski, Werner; Bergmann, Rolf; Hameister, Walter; and Wahlig, Helmut, 4,243,810, Cl. 546-295.000.

Bergwerksverband GmbH: *See—*
Handrick, Kurt; and Kolling, Georg, 4,243,590, Cl. 260-319.100.

Bernady, Karel F.: *See—*
Wissner, Allan; Weiss, Martin J.; and Bernady, Karel F., 4,243,817, Cl. 560-62.000.

Bernard, Philippe G.; and Bunn, Jack E. Apparatus for rebuilding cylindrical objects. 4,242,981, Cl. 118-47.000.

Bernatowicz, Henry: *See—*
Grossman, Leonard N.; Portis, Alan M.; Bernatowicz, Henry; and Schoenig, Frederick C., Jr., 4,243,939, Cl. 324-201.000.

Bernhardt, Karl-Heinz: *See—*
Bartholomaus, Reiner; Bernhardt, Karl-Heinz; Eberhard, Wolfgang; Kokus, Hans-Dieter; Lembke, Herbert; and Schulte, Heinz, 4,242,942, Cl. 91-358.00R.

Bertholon, Philippe P., to Electronique Marcel Dassault. Telephone transmission installation between interlocutors in a noisy environment. 4,243,837, Cl. 179-1.0VC.

Best & Donovan: *See—*
Wikoff, Mark W., 4,242,798, Cl. 30-380.000.

Best, Lorne A., to National Element, Inc. Electrical heating element. 4,243,872, Cl. 219-375.000.

Bethune, Donald S.; Lankard, John R.; Loy, Michael M.; and Sorokin, Peter P., to International Business Machines Corporation. Time-resolved infrared spectral photography. 4,243,881, Cl. 250-338.000.

Beyersdorf, Hartwig. Ionization fire-signal device. 4,243,981, Cl. 340-629.000.

Bianchi, Valerio: *See—*
Scherenberg, Dieter; and Bianchi, Valerio, 4,242,991, Cl. 123-326.000.

Bindra, Jasjit S., to Pfizer Inc. 9-Hydroxydibenzo[b,d]pyrans and intermediates therefore. 4,243,674, Cl. 424-283.000.

Bindra, Jasjit S.: *See—*
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,243,595, Cl. 260-345.70P.

Birkelbach, Donald F.; and Knight, George W., to Dow Chemical Company, The. High efficiency catalyst for polymerizing olefins. 4,243,785, Cl. 526-115.000.

Bishop, Richard L.: *See—*
Anderson, David L.; and Bishop, Richard L., 4,244,019, Cl. 364-200.000.

Black and Decker Manufacturing Company: *See—*
Bunyea, Roderick F.; and Wagster, Robert P., 4,243,212, Cl. 269-75.000.

Black, John W. Removable sign post holding apparatus. 4,242,822, Cl. 40-607.000.

Blaha, James G., to Towmotor Corporation. Seal and seal assembly. 4,243,234, Cl. 277-84.000.

Blancke, Timothy B., to Hewlett-Packard Company. Coupling circuit with driven guard. 4,243,044, Cl. 128-696.000.

Blanco, David M. Hair styling apparatus. 4,242,810, Cl. 34-98.000.

Blanton, William A., Jr., to Chevron Research Company. Sulfur oxides control in cracking catalyst. 4,243,556, Cl. 252-455.00Z.

Bliven, Andrew W., II; and Kindlmann, Peter J., to Echlin Manufacturing Company, The. Digital bar graph tachometer. 4,243,938, Cl. 324-169.000.

Blomberg, Peter E., to Aktiebolaget Electrolux. Control system for a refrigerating apparatus operable electrically or by gas. 4,242,879, Cl. 62-148.000.

Blount, David H. Process for the production of alkali metal-cellulose-silicates and their reaction products. 4,243,757, Cl. 521-154.000.

Bo, Ermanno, to B.B.M. S.A. Independent cryogenic fluid vaporization installation. 4,242,986, Cl. 122-33.000.

Bobby, Fults J. Wire stripping device. 4,242,929, Cl. 81-9.50R.

Bobick, Thomas W., to Xerox Corporation. Display processor for producing video signals from digitally encoded data to create an alphanumeric display. 4,243,987, Cl. 340-799.000.

BOC Limited: *See—*
Garrett, Michael E., 4,243,065, Cl. 137-171.000.

Bocca, Alberto; and Pagani, Mario, to Sagitta Officina Meccanica S.p.A. Device for infeeding a strip of flexible material for use in machines for binding thin articles and, in particular, machines for edging parts for boots and shoes. 4,242,770, Cl. 12-24.500.

Bodycomb, Frederick M., Jr.; and Bauman, Glenn R., to Johns-Manville Corporation. Dust shroud for pipe-cutting portable circular saw. 4,243,011, Cl. 125-13.00R.

Boeckx, Gustaaf M.: *See—*
Raeymaekers, Alfons H. M.; Van Gelder, Josephus L. H.; Boeckx, Gustaaf M.; and Van Hemeldonck, Lodewijk L., 4,243,806, Cl. 544-396.000.

Boeder, Dieter; Jaeneke, Christian; Romer, Rudolf; and Sikorski, Guenter, to Rheinmetall GmbH. Automatically disintegrating missile. 4,242,960, Cl. 102-92.700.

Boehringer Mannheim GmbH: *See—*
Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; and Plattner, Werner, administrator, 4,243,807, Cl. 546-232.000.

Boeing Company, The: *See—*
Brasfield, Robert G., 4,243,934, Cl. 324-72.000.
Lamberty, Bernard J.; and Andrews, George S., 4,243,993, Cl. 343-895.000.
Ohgi, George Y., 4,243,189, Cl. 244-75.00R.

Bogner, Karl-Heinz; and Sprenger, Martin;, to Robert Bosch GmbH. Electromagnetically operated switch, particularly starter switch for automotive starter motors. 4,243,964, Cl. 335-156.000.

Bohner, Beat; and Rohr, Otto, to Ciba-Geigy Corporation. Herbicidally active α-(4-phenoxyphenoxy)propionic acid alkoxyalkyl amides, herbicidal compositions containing them and their use. 4,243,410, Cl. 71-118.000.

Boileau, Sylvie L.; Caubere, Paul J.; Ndebeka, Gilberte; Lecolier, Serge L.; and Raynal, Serge F., to Societe Nationale des Poudres et Explosifs. Bulk anionic polymerization process using an alkali metal amide and the salt of the same alkali metal with a hydroxylic compound. 4,243,787, Cl. 526-180.000.

Bolen, Charles E.: *See—*
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,243,426, Cl. 106-273.00R.

Bolger, Bernard J.: *See—*
O'Sullivan, Denis J.; Bolger, Bernard J.; and Casey, T. Eisirt, 4,243,578, Cl. 260-42.520.

Bonnel, Michel G., to Dodge, Colmant Cuvelier. Crushing device. 4,243,180, Cl. 241-79.200.

Bononi, Walter H. Pad device. 4,243,306, Cl. 351-136.000.

Borer, Karl: *See—*
Heim, Peter; Borer, Karl; and Allemann, Werner, 4,243,778, Cl. 525-454.000.

Borg-Warner Corporation: *See—*
Melhorn, Barry J.; and Krulikowski, Alex, 4,242,924, Cl. 74-759.000.
Noltes, Jan G.; Jastrzebski, J. T. B. H.; and van Koten, Gerard, 4,243,604, Cl. 260-430.000.
Noltes, Jan G.; van Koten, Gerard; and Cohen, Murray S., 4,243,824, Cl. 585-259.000.

Borner, John W.: *See—*
Goodale, Robert L.; Dressel, Thomas D.; and Borner, John W., 4,243,049, Cl. 128-757.000.

Bortfeld, David P.; and Vieland, Leon J., to RCA Corporation. Simplified resistive lens electron gun with compound linear voltage profile. 4,243,912, Cl. 315-3.000.

Bortfeld, David P.: *See—*
Winarsky, Norman D.; Cohen, Roger W.; Bortfeld, David P.; and Vieland, Leon J., 4,243,911, Cl. 315-3.000.

Boryta, Daniel A.: *See—*
Brown, Patrick M.; and Boryta, Daniel A., 4,243,392, Cl. 23-295.00S.

Boshold, Raymond F.; and Kent, Francis J., to Wean United, Inc. Method and apparatus for cooling and handling extruded workpieces. 4,242,895, Cl. 72-257.000.

Bossuet, Jean; Godet, Jean; Guiton, Jean-Francois; Sizarol, Rene; and Waegaert, Pierre, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Method and device for wrapping closed tip cigars. 4,243,055, Cl. 131-76.000.

Bourard, Daniel P. J.; and Garconnet, Michel J. Marked cable sling. 4,242,777, Cl. 24-115.00A.

Bourdauducq, Paul M. C.; Brouard, Claude M. H. E.; Moerel, Claude L. E.; and Stiot, Jean-Pierre H., to Produits Chimiques Ugine Kuhlmann. N-Substituted anilines. 4,243,606, Cl. 260-465.00D.

Bourgeois, Louis: *See—*
Nicolas, Edgard; and Bourgeois, Louis, 4,243,497, Cl. 204-98.000.

Bowe, Gerald R.; and Stewart, James F., to Pako Corporation. Adjustable width punch marking apparatus for photographic printer. 4,243,314, Cl. 355-29.000.

Boyd, Walter K., to Mechanization Systems Company. Roofing machine. 4,243,468, Cl. 156-577.000.

Brad Harrison Company: *See—*
Kinnear, Joseph D., 4,243,292, Cl. 339-224.000.

Bradford, James L.; and Ore, Fernando, to Occidental Petroleum Company. Uranium recovery from pre-treated phosphoric acid. 4,243,637, Cl. 423-10.000.

Bradshaw, Franklin C.; Connoy, Thomas P.; and Deutsch, Dennis A., to Kroy Industries, Inc. Printing apparatus. 4,243,333, Cl. 400-158.000.

Brambilla, Luigi: *See—*
Scholz, Hansjugen; Backhaus, Hans-Gerd; and Brambilla, Luigi, 4,243,248, Cl. 280-735.000.

Brandao, Ruy L.: *See—*
Kang, Eyung W.; Brandao, Ruy L.; Bares, Jaromir R.; and Payne, Delmar V., 4,243,988, Cl. 343-5.0VQ.

Brandes, Susan D.: *See—*
Farcasiu, Malvina; and Brandes, Susan D., 4,243,539, Cl. 252-52.00R.

Brandt, Werner J., to Viggo AB. Cannula or catheter assembly. 4,243,034, Cl. 128-214.400.

Brannigan, Lawrence H.; Franz, John E.; and Schafer, David E., to Monsanto Company. 5-Aryl-4-isoxazolecarboxylate-safening agents. 4,243,406, Cl. 71-88.000.

Brasfield, Robert G., to Boeing Company, The. Composite signal generator. 4,243,934, Cl. 324-72.000.

Braun, Curt, to Hunter Engineering Co., Inc. Paint line flotation oven. 4,242,807, Cl. 34-23.000.

Braun, Michael: *See—*
Fondiller, Robert; Grund, Christian; Dobler, Steve; and Braun, Michael, 4,244,040, Cl. 368-69.000.

Brecher, Charles; and Oblas, Daniel W., to GTE Laboratories Incorporated. Fluorescent lamp alkaline earth halophosphate phosphor with protective $NaCs_2PrCl_6$ coating. 4,243,909, Cl. 313-487.000.

Breckinridge, James B.: *See—*
United States of America, National Aeronautics and Space Administration; and Breckinridge, James B., 4,243,323, Cl. 356-345.000.

Brehm, Emil. Control device for monitoring machines driving revolving devices and method for operating the device. 4,243,920, Cl. 318-285.000.

Bremer, Robert C., Jr., to Wallace Murray Corporation. Deformed locking clamp. 4,242,921, Cl. 74-574.000.

Brennan, Michael P. J., to Chloride Silent Power Limited. Electrode structures. 4,243,733, Cl. 429-94.000.

Brenner, Kurt H., Jr., to GTE Products Corporation. Electrical connective means for a CRT mask-panel assembly. 4,243,908, Cl. 313-407.000.

Breton, Robert A., to United Technologies Corporation. Louver burner liner. 4,242,871, Cl. 60-757.000.

Brinkerhoff, VerDon C., to Split Cycle Energy Systems, Inc. Isothermal compressor apparatus and method. 4,242,878, Cl. 62-119.000.

Briscoe, Ralph D.; and Barlow, Wayne K., to Wescor, Inc. Thermocouple-equipped, soil probe with removable protective shield. 4,242,906, Cl. 73-73.000.

Bristol-Myers Company: *See—*
Lim, Gary M. F.; and Endo, Masaki, 4,243,803, Cl. 544-26.000.

British Petroleum Company Limited, The: *See—*
Cambell, Robert A.; and Witheridge, Rodney E., 4,243,376, Cl. 431-202.000.

Broberg, Hans; and Douren, Lars, to Aktiebolaget Bofors. Device for an installation of a quartz tube in a device for concentration of mineral acids. 4,243,477, Cl. 159-13.00A.

Brockhaus, Rudolf; and Franke, Hans-Jurgen, to Chemische Werke Huls Aktiengesellschaft. Process for the manufacture of mixtures of formaldehyde and methanol by partial oxidation of methane. 4,243,613, Cl. 568-482.000.

Brouard, Claude M. H. E.: *See—*
Bourdauducq, Paul M. C.; Brouard, Claude M. H. E.; Moerel, Claude L. E.; and Stiot, Jean-Pierre H., 4,243,606, Cl. 260-465.00D.

Brouard, Germain G.; and Molleron, Claude A., to Societe Anonyme de Telecommunications. Digital data transmission system providing multipoint communications. 4,244,046, Cl. 370-62.000.

Broughton, Barbara J.; Caton, Michael P. L.; and Hambling, David J., to May & Baker Limited. Tertiary alcohols. 4,243,683, Cl. 424-331.000.

Brouwer, Frans. Differential capacitor and circuit. 4,243,114, Cl. 177-210.00C.

Brown, Jack, to Singer Company, The. Motor braking arrangement. 4,243,919, Cl. 318-269.000.

Brown, Larry D.: *See—*
Peter, Jack; Offerman, Karl B.; Brown, Larry D.; and Stone, Derek J., 4,243,186, Cl. 242-195.000.

Brown, Louis R.: *See—*
Wallace, Harry L.; Horak, Anthony; Krebs, Fred G.; and Brown, Louis R., 4,243,330, Cl. 400-194.000.

Brown, Patrick M.; and Boryta, Daniel A., to Foote Mineral Company. Process for solar concentration of lithium chloride brine. 4,243,392, Cl. 23-295.00S.

Brown, Paul: *See—*
Rees, Herbert; Brown, Paul; and Grund, Miroslav, 4,243,364, Cl. 425-153.000.

Brown, Peter, to Polymer Investments N.V. Ethylene copolymer compositions and process for the preparation thereof. 4,243,568, Cl. 260-29.60R.

Brown, Vincent B.; Kozel, Charles A.; and Scheitz, John T., to Methode Electronics, Inc. Insulation displacement connector. 4,243,286, Cl. 339-97.00R.

Brown, Wesley A.: *See—*
Cha, John H.; Brown, Wesley A.; Weldon, Harry P.; and Whyte, Daniel G., 4,243,345, Cl. 405-168.000.

Brudi Equipment Co., Inc.: *See—*
Brudi, Ronald A.; and Chase, Daniel F., 4,243,355, Cl. 414-620.000.

Brudi, Ronald A.; and Chase, Daniel F., to Brudi Equipment Co., Inc. Lift truck rotator with pressure-relieved valving. 4,243,355, Cl. 414-620.000.

Bruening, Robert A. Floating roof penetrations with reduced vapor space seal. 4,243,151, Cl. 220-216.000.

Brugger, Wilhelm, to Th. Goldschmidt AG. Process for the manufacture of zirconium oxide from technical calcium zirconate. 4,243,649, Cl. 423-608.000.

Bruno, John. Magnetically attractive display device. 4,242,823, Cl. 40-621.000.

Brunsell, Dennis A.: *See—*
Riggs, Olen L., Jr.; and Brunsell, Dennis A., 4,243,494, Cl. 204-1.500.

Brunswick Corporation: *See—*
Morton, Kenneth I., 4,243,709, Cl. 428-195.000.
Staerzl, Richard E., 4,243,009, Cl. 123-435.000.

Bruseghini, Leonida: *See—*
Adsara, Jorge D.; Casadio, Silvano; Ribalta, Jose M. B.; and Bruseghini, Leonida, 4,243,679, Cl. 424-319.000.

Bubley, Henry J.; Green, Melvin E.; and Iaccino, Alex, to American Screen Printing Equipment Company. Takeoff apparatus for a wicket dryer. 4,242,956, Cl. 101-123.000.

Buchanan, Glen W. Hair curling and waving device. 4,243,061, Cl. 132-37.00R.

Buchel, Karl H.: *See—*
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; and Plempel, Manfred, 4,243,670, Cl. 424-269.000.

Buchner, Heinrich: *See—*
Horn, Hannes S.; and Buchner, Heinrich, 4,243,379, Cl. 432-14.000.

Buckman Laboratories, Inc.: *See—*
Fenyes, Joseph G. E.; and Pera, John D., 4,243,524, Cl. 210-700.000.

Budden, Renke: *See—*
Milkowski, Wolfgang; Budden, Renke; Funke, Siegfried; Huschens, Rolf; Liepmann, Hans-Gunther; Stuhmer, Werner; and Zeugner, Horst, 4,243,585, Cl. 260-239.0BD.

Budziak, Renno W.: *See—*
Willoughby, Robert A.; and Budziak, Renno W., 4,243,111, Cl. 173-169.000.

Buerner, Wolfgang P., to Los Angeles Scientific Instrument Co. Inc. Universal digital converter for drafting machines. 4,242,804, Cl. 33-438.000.

Buffalo Color Corporation: *See—*
Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., 4,243,822, Cl. 568-769.000.

Buffet, Denis, to Robatel S.L.P.I. Centrifuges having a bowl openable while in operation. 4,243,172, Cl. 233-20.00A.

Buhler, Rato R., to American Optical Corporation. Convergence mechanism for binocular refracting instrument. 4,243,304, Cl. 351-27.000.

Bulbenko, George F., to Becton, Dickinson and Company. Blood separation. 4,243,534, Cl. 210-656.000.

Bunkowski, Kenneth D.: *See—*
Jaisle, Richard F.; and Bunkowski, Kenneth D., 4,243,461, Cl. 156-288.000.

Bunn, Jack E.: *See—*
Bernard, Philippe G.; and Bunn, Jack E., 4,242,981, Cl. 118-47.000.

Bunyea, Roderick F.; and Wagster, Robert P., to Black and Decker Manufacturing Company. Means for restraining a swivel vise. 4,243,212, Cl. 269-75.000.

Burckhardt, Christoph B.; Grandchamp, Pierre-Andre; Hoffmann, Heinz; and Fehr, Rainer, to Hoffmann-La Roche Inc. Method and apparatus for producing cross-sectional images using ultrasound. 4,242,912, Cl. 73-626.000.

Burge, Russell W., to Mobay Chemical Corporation. Flexible foam rebonding process and apparatus. 4,243,617, Cl. 264-39.000.

Burge, Russell W., to Mobay Chemical Corporation. Flexible foam bonding process. 4,243,625, Cl. 264-120.000.

Burk, Emmett H.; Yoo, Jin S.; Karch, John A.; and Sun, Jui-Yuan, to Atlantic Richfield Company. Catalyst demetallization with a reductive SO_2 wash. 4,243,550, Cl. 252-412.000.

Burke, Oliver W., Jr., deceased (by Scala, Norma, administratrix), to Exxon Research and Engineering Company. Preparation of latex from solvent dispersed polymer composition. 4,243,566, Cl. 260-29.60R.

Burlison, Dale E.: *See—*
Burlison, Larry J.; and Burlison, Dale E., 4,243,164, Cl. 224-52.000.

Burlison, Larry J.; and Burlison, Dale E. Game dragging device. 4,243,164, Cl. 224-52.000.

Burroughs Corporation: *See—*
O'Neill, Charles F., 4,243,472, Cl. 156-624.000.
Wallace, Harry L.; Horak, Anthony; Krebs, Fred G.; and Brown, Louis R., 4,243,330, Cl. 400-194.000.
York, Kenneth L.; Annal, Peter R.; and Legory, John E., 4,244,049, Cl. 371-38.000.

Buttner, Gerhard: *See—*
Sommer, Richard; Wolfrum, Gerhard; and Buttner, Gerhard, 4,243,584, Cl. 260-165.000.

B.V. Machinefabriek M. Brouwer & Co.: *See—*
Roetgerink, Johannes A., 4,242,853, Cl. 53-398.000.

Bye, Ashley D.; and Newton, Alan B., to Imperial Chemical Industries Limited. Transition metal compound. 4,243,782, Cl. 526-140.000.

Byk Gulden Lomberg Chemische Fabrik GmbH: *See—*
Krastinat, Walter, 4,243,678, Cl. 424-319.000.
C F Braun & Co.: *See—*
Schaefer, Arthur E., 4,242,875, Cl. 62-23.000.
C.G.R.MeV: *See—*
Leboutet, Hubert; and Tronc, Dominique, 4,243,916, Cl. 315-111.800.
C-I-L Inc.: *See—*
Utracki, Lechoslaw A. M., 4,243,443, Cl. 149-35.000.
C & K Components, Inc.: *See—*
Turner, W. Bard, 4,243,853, Cl. 200-8.00R.
C. Keller GmbH u. Co. KG: *See—*
Keck, Dieter, 4,243,012, Cl. 125-23.00R.
C.W.M. Du Toit Beleggings (Eiendoms) Beperk: *See—*
Stoltz, Andries J., 4,242,910, Cl. 73-516.0LM.
Cade, Phillip J., to Electronics Corporation of America. Burner control system. 4,243,372, Cl. 431-31.000.
Cadillac Gage Company: *See—*
Bemiss, James M., 4,242,951, Cl. 98-2.110.
Caffoz, Robert: *See—*
Peschel born Chaudron, Huguette; and Caffoz, Robert, 4,243,057, Cl. 131-147.00A.
Cahoy, Roger P., to Gulf Oil Corporation. 2-Acylaminothiazol-4-ylacetamides as post emergent selective herbicides. 4,243,407, Cl. 71-90.000.
Cambell, Robert A.; and Witheridge, Rodney E., to British Petroleum Company Limited, The. Flare. 4,243,376, Cl. 431-202.000.
Campbell, Clark M.: *See—*
Tharp, Charles E.; and Campbell, Clark M., 4,243,521, Cl. 210-626.000.
Campbell, Simon F.; Danilewicz, John C.; Greengrass, Colin W.; and Plews, Rhona M., to Pfizer Inc. 4-Amino-2-piperidino-quinazolines. 4,243,666, Cl. 424-248.540.
Campbell, Thomas C.; Hertzenberg, Elliot P.; and Sherry, Howard S., to PQ Corporation. Detergent compositions with silane-zeolite silicate builder. 4,243,545, Cl. 252-140.000.
Canon Kabushiki Kaisha: *See—*
Goshima, Takeshi; Sato, Hideaki; and Tsuji, Takao, 4,243,849, Cl. 369-62.000.
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.
Kobayashi, Hajime; Koumura, Noboru; and Ohno, Shigeru, 4,243,994, Cl. 346-140.00R.
Masuda, Shunichi; and Shimizu, Katsuichi, 4,243,313, Cl. 355-14.00R.
Tohyama, Yoshikuni; Kimura, Yoshimasa; Ishida, Masato; and Miyamoto, Koichi, 4,243,311, Cl. 355-8.000.
Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, 4,243,308, Cl. 354-60.00E.
Canron Corp.: *See—*
Pearson, Eugene W.; and Short, Wilbur G., 4,242,901, Cl. 72-345.000.
Capetola, Robert J.; and McGuire, John L., to Ortho Pharmaceutical Corporation. Analgesic compositions and methods of use. 4,243,673, Cl. 424-275.000.
Caprari, Fausto, to RCA Corporation. Flash lamp drive circuit. 4,243,917, Cl. 315-241.00R.
Caraher, James R., to Machlett Laboratories, Inc., The. Image intensifier tube with insulator shield. 4,243,904, Cl. 313-99.000.
Cardot, Claude: *See—*
Lemoussu, Michel; and Cardot, Claude, 4,243,956, Cl. 333-18.000.
Cargnel, Louis A.: *See—*
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Carley, Emilie L.: *See—*
Eustance, John W.; Hobbs, Stanley Y.; and Carley, Emilie L., 4,243,708, Cl. 428-141.000.
Carlock, Gaylord W.; McKeown, William L.; Goodman, James R.; and Skrodzki, Chester, to Textron. Control system for redundant swashplate drive. 4,243,358, Cl. 416-114.000.
Carlyon, George C.: *See—*
Benkelman, William D.; and Carlyon, George C., 4,242,849, Cl. 52-741.000.
Carreyve, Claude: *See—*
Faillon, Georges; and Carreyve, Claude, 4,243,961, Cl. 333-233.000.
Carrier Corporation: *See—*
Cooper, Edward G.; Jeffers, Richard D.; and New, David M., 4,242,876, Cl. 62-89.000.
Czuszak, Charles C., 4,243,275, Cl. 308-128.000.
Carroll, Arthur B.; Lazarevich, Vladeta D.; and Gardner, Mark R., to Carroll Manufacturing Corporation. Touch panel with ambient light sampling. 4,243,879, Cl. 250-221.000.
Carroll Manufacturing Corporation: *See—*
Carroll, Arthur B.; Lazarevich, Vladeta D.; and Gardner, Mark R., 4,243,879, Cl. 250-221.000.
Carson, Don B., to UOP Inc. Alkylation process. 4,243,830, Cl. 585-717.000.
Cartwright, William F.; Cornell, Alan; Higgins, D. Bernard; and Mikkelson, Robert P., to Gulf & Western Company. Filter cigar. 4,243,053, Cl. 131-4.00A.
Carver, Robert G., to Creative Cartons of Ashland, Inc. Collapsible photographic slide viewer. 4,242,818, Cl. 40-364.000.
Casadio, Silvano: *See—*
Adsara, Jorge D.; Casadio, Silvano; Ribalta, Jose M. B.; and Bruseghini, Leonida, 4,243,679, Cl. 424-319.000.
Casey, T. Eisirt: *See—*
O'Sullivan, Denis J.; Bolger, Bernard J.; and Casey, T. Eisirt, 4,243,578, Cl. 260-42.520.
Casper, Badenhorst H.: *See—*
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Cassidy, Harold M.: *See—*
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Castor, James J.: *See—*
Piet, Meyer; and Castor, James J., 4,243,069, Cl. 137-484.600.
Caterpillar Mitsubishi Ltd.: *See—*
Takojima, Hyoichi, 4,243,356, Cl. 414-723.000.
Caterpillar Tractor Co.: *See—*
Bailey, John M., 4,242,863, Cl. 60-39.060.
Behrends, Bertwin E.; and Diebel, David A., 4,243,535, Cl. 210-315.000.
Dauwalder, Fred R., 4,243,258, Cl. 294-88.000.
Earle, Michael; and Lenzen, Glenn H., 4,243,867, Cl. 219-121.0LC.
Nieman, John R., 4,243,093, Cl. 164-96.000.
Caton, Michael P. L.: *See—*
Broughton, Barbara J.; Caton, Michael P. L.; and Hambling, David J., 4,243,683, Cl. 424-331.000.
Caubere, Paul J.: *See—*
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Celette S.A.: *See—*
Dory, Alain, 4,242,803, Cl. 33-288.000.
Cenker, Moses; and Narayan, Thirumurti, to BASF Wyandotte Corporation. Stable-liquid isocyanurate-modified polyisocyanate compositions. 4,243,756, Cl. 521-125.000.
Centro Ricerche Fiat S.p.A.: *See—*
Balestrini, Augusto, 4,243,560, Cl. 260-2.300.
Cesano, Franco, to G.O.R. Applicazioni Speciali S.p.A. Laminating method and apparatus. 4,243,456, Cl. 156-214.000.
Cha, Chang Y., to Occidental Oil Shale, Inc. Operation of in situ oil shale retort with void at the top. 4,243,100, Cl. 166-259.000.
Cha, John H.; Brown, Wesley A.; Weldon, Harry P.; and Whyte, Daniel G., to Santa Fe International Corporation. Pipe handling apparatus for reel pipe laying system. 4,243,345, Cl. 405-168.000.
Chabin, Michel, to Societe Franco-Americaine de Constructions Atomiques-Framatome. Recirculating drainage channel for the safety circuits of a nuclear reactor. 4,243,485, Cl. 176-37.000.
Chabries, Douglas M.: *See—*
McCool, John M.; Widrow, Bernard; Hearn, Robert H.; Zeidler, James R.; Chabries, Douglas M.; and Moore, Randall H., 4,243,935, Cl. 324-77.00R.
Chaffoteaux et Maury: *See—*
Rosset, Robert H.; and Jardy, Alain P., 4,243,496, Cl. 204-56.00R.
Chalabian, Jack S., to K-Jack Engineering Company, Inc. Coin operated vending apparatus with multiple coin chutes. 4,243,134, Cl. 194-59.000.
Challenge-Cook Bros. Incorporated: *See—*
Prichard, Evan S., 4,243,328, Cl. 366-62.000.
Challis, Lawrence J., to National Research Development Corporation. Phonon spectroscopy. 4,242,905, Cl. 73-15.00R.
Chamberlain, Harvey H., to General Electric Company. Boiler level control system. 4,242,989, Cl. 122-451.00R.
Champion International Corporation: *See—*
Hartman, Seymour, 4,243,419, Cl. 106-18.230.
Jones, Michael D., 4,243,170, Cl. 229-2.54R.
Champion Spark Plug Company: *See—*
Grime, Thomas E.; and Robinson, Frank A., Jr., 4,243,870, Cl. 219-295.000.
Chan, David C. K., to Chevron Research Company. Herbicidal N-triazolylmethyl-substituted alpha-haloacetanilide. 4,243,408, Cl. 71-092.000.
Chang, Daniel C. Temperature control for resistance heating element. 4,243,875, Cl. 219-497.000.
Chang, Ki Suk: *See—*
Ackley, David A.; Rogers, Gerald D.; Macourek, Peter H.; Guttag, Karl M.; and Chang, Ki Suk, 4,243,984, Cl. 340-703.000.
Chang, Robert W. H., to Minnesota Mining and Manufacturing Company. Compositions and methods for reducing elution of therapeutic agents from teeth. 4,243,658, Cl. 424-52.000.
Chang, Shung-Ho: *See—*
Regnier, Frederick E.; and Chang, Shung-Ho, 4,243,753, Cl. 435-288.000.
Chao, Sam T.; and Varma, Ravi K., to E. R. Squibb & Sons, Inc. Steroidal-17-spiro-dihydrofuranones. 4,243,586, Cl. 260-239.55R.
Chapron, Claude, to U.S. Philips Corporation. I^2L Circuit with auxiliary transistor. 4,243,896, Cl. 307-213.000.
Chase, Charles P.; and MacAnally, Richard B., to Heyer-Schulte Corporation. Intraocular lens with threadably locked retention loops. 4,242,761, Cl. 3-13.000.
Chase, Daniel F.: *See—*
Brudi, Ronald A.; and Chase, Daniel F., 4,243,355, Cl. 414-620.000.
Chavanoz SA: *See—*
Seguin, Pierre, 4,243,445, Cl. 156-55.000.
Checkwood, Andrew M.: *See—*
Checkwood, Andrew R.; and Checkwood, Andrew M., 4,242,969, Cl. 108-153.000.
Checkwood, Andrew R.; and Checkwood, Andrew M., to Checkwood, Andrew R.; Checkwood, Andrew M.; and Checkwood, Larry. Table and shelf assembly. 4,242,969, Cl. 108-153.000.

Checkwood, Larry: *See—*
Checkwood, Andrew R.; and Checkwood, Andrew M., 4,242,969, Cl. 108-153.000.

Chegodaev, Evgeny V.: *See—*
Vorona, Ilya I.; Ioganson, Rikhard A.; Perchenok, Mark B.; Chegodaev, Evgeny V.; and Chulin, Valentin I., 4,243,901, Cl. 310-94.000.

Chemische Werke Huls Aktiengesellschaft: *See—*
Brockhaus, Rudolf; and Franke, Hans-Jurgen, 4,243,613, Cl. 568-482.000.

Cherba, David M., to Westinghouse Electric Corp. Programmable dual stack relay ladder line solver and programming panel therefor. 4,244,034, Cl. 364-900.000.

Cheron, Jacques, to Institut Francais du Petrole. Method and device for feeding a fuel cell with fluid reactants. 4,243,731, Cl. 429-13.000.

Cherry, Edward M., to Monash University. Feedback systems. 4,243,943, Cl. 330-100.000.

Chevron Research Company: *See—*
Blanton, William A., Jr., 4,243,556, Cl. 252-455.00Z.
Chan, David C. K., 4,243,408, Cl. 71-092.000.
Ferm, Richard L., 4,243,563, Cl. 260-17.00R.
Franklin, Frederick C.; and Lewis, Robert A., 4,243,798, Cl. 528-371.000.
Sweeney, W. Alan, 4,243,777, Cl. 525-425.000.

Chianelli, Russell R.: *See—*
Jacobson, Allan J.; Chianelli, Russell R.; and Whittingham, M. Stanley, 4,243,624, Cl. 264-82.000.

Chiao, Cherry C., to Dow Chemical Company, The. Modified thermoplastic resins. 4,243,577, Cl. 260-42.470.

Chiles, Robert E., III, to AMF Incorporated. Ergometric exerciser. 4,244,021, Cl. 364-413.000.

Chill, James L.; Taylor, Harry H.; and Granger, Evertt H., to Marion Bronze Company. Process for forming articles from leaded bronzes. 4,243,437, Cl. 148-11.50C.

Chincin Gyogyszer es Vegyeszeti Termekek Gyara Rt.: *See—*
Simon, Agoston; and Lengyel, Zoltan, 4,243,685, Cl. 426-53.000.

Chiyoda Chemical Engineering and Construction Co., Ltd.: *See—*
Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,243,633, Cl. 422-129.000.

Chloride Silent Power Limited: *See—*
Brennan, Michael P. J., 4,243,733, Cl. 429-94.000.

Choksi, Pradip V.; Michael, Kenneth R.; and Penny, William H., to American Hospital Supply Corporation. Method of mixing plural components. 4,243,080, Cl. 141-2.000.

Christian, Miles W., to Banner Energy Corporation. Coal article. 4,243,393, Cl. 44-14.000.

Chromalloy American Corporation: *See—*
Sizelove, Cary L.; and Wells, Donald G., 4,243,352, Cl. 414-313.000.

Chronberg, Sten, to Agence Nationale de Valorisation de la Recherche (ANVAR). Process and device for displacing firing plates through a tunnel kiln. 4,243,378, Cl. 432-11.000.

Chronolog Systems Limited: *See—*
Quayle, Ian H., 4,243,985, Cl. 340-753.000.

Chrysler Corporation: *See—*
Eshelman, Robert W.; and Benjey, Robert P., 4,242,914, Cl. 73-711.000.
Spaargaren, Robert; and DiMatteo, Albert, 4,243,125, Cl. 188-79.50P.

Chugai Denki Kogyo Kabushiki-Kaisha: *See—*
Shibata, Akira, 4,243,413, Cl. 75-234.000.

Chulin, Valentin I.: *See—*
Vorona, Ilya I.; Ioganson, Rikhard A.; Perchenok, Mark B.; Chegodaev, Evgeny V.; and Chulin, Valentin I., 4,243,901, Cl. 310-94.000.

Ciba-Geigy AG: *See—*
Fry, Michael W., 4,243,745, Cl. 430-433.000.
Tzikas, Athanassios, 4,243,600, Cl. 260-377.000.

Ciba-Geigy Corporation: *See—*
Bohner, Beat; and Rohr, Otto, 4,243,410, Cl. 71-118.000.
Nachbur, Hermann; Hiestand, Armin; and Rohringer, Peter, 4,243,418, Cl. 106-18.220.
Portmann, Robert, 4,243,583, Cl. 260-156.000.
Schafer, Paul; Berendt, Hans-Ulrich; and Haase, Jaroslav, 4,243,390, Cl. 8-553.000.
Schmidt, Andreas, 4,243,816, Cl. 560-60.000.
Seitz, Karl, 4,243,809, Cl. 546-291.000.

Cieloszyk, Gary S.: *See—*
Fraser, William A.; and Cieloszyk, Gary S., 4,243,619, Cl. 264-40.600.

Ciganek, Engelbert, to Du Pont de Nemours, E. I., and Company. Octahydro-1H-benzo[4,5]furo[3,2-e]-isoquinoline analgesic and narcotic antagonistic compounds. 4,243,668, Cl. 424-258.000.

Cipher Data Products, Incorporated: *See—*
Peter, Jack; Offerman, Karl B.; Brown, Larry D.; and Stone, Derek J., 4,243,186, Cl. 242-195.000.

Ciszek, Theodore F.; and Schwuttke, Guenter H., to International Business Machines Corporation. Method for directional solidification of silicon. 4,243,471, Cl. 156-616.00R.

Citizen Watch Co., Ltd.: *See—*
Enomoto, Tadao; and Ito, Nobuo, 4,243,303, Cl. 350-345.000.
Fujita, Hiro; Tsuzuki, Akira; Ebiha, Heihachiro; and Sekiya, Fukuo, 4,244,043, Cl. 368-85.000.
Nakayama, Yasuaki, 4,243,329, Cl. 368-76.000.

Clapp, Keith A.; and Stewart, Donald A., to General Electric Company. Broaching assembly having disposable carbide inserts. 4,243,347, Cl. 407-15.000.

Clapp, Roger E.: *See—*
Lennon, Donald J. J.; and Clapp, Roger E., 4,243,726, Cl. 428-545.000.

Clarion Co., Ltd.: *See—*
Hamada, Masanori; and Kawaguchi, Sueji, 4,244,056, Cl. 455-213.000.

Clemenson, James T.; and Vincent, Robert R., to Cooper Industries, Inc. Pneumatic percussion drill with exhaust cooling and lubrication of chuck end. 4,243,110, Cl. 173-104.000.

Clement, Burke. Gear wrench. 4,242,931, Cl. 81-57.290.

Clements, Harold J.: *See—*
Hickey, Christopher D. D.; and Clements, Harold J., 4,243,349, Cl. 410-77.000.

Clinch, Marvin R.; Graf, Calvin R.; Martin, Paul E.; and Fenwick, Robert B., to United States of America, Air Force. Privacy communication method and system. 4,244,053, Cl. 455-29.000.

Clow Corporation: *See—*
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,243,075, Cl. 138-174.000.

Coburn, Robert E., to Molins Machine Company, Inc. Trim chute apparatus. 4,242,934, Cl. 83-100.000.

Coffey, Dennis K. Stiffness variation device. 4,243,838, Cl. 179-1.00F.

Coffey, Valerie J.: *See—*
Lind, David J.; Coffey, Valerie J.; and Hallam, Joyce, 4,243,646, Cl. 423-447.100.

Cohen, Murray S.: *See—*
Noltes, Jan G.; van Koten, Gerard; and Cohen, Murray S., 4,243,824, Cl. 585-259.000.

Cohen, Roger W.: *See—*
Winarsky, Norman D.; Cohen, Roger W.; Bortfeld, David P.; and Vieland, Leon J., 4,243,911, Cl. 315-3.000.

Colas, Christian F.: *See—*
Orliaguet, Maurice; and Colas, Christian F., 4,242,852, Cl. 53-89.000.

Collombin, Andre M.: *See—*
Curetti, Ennio G.; and Collombin, Andre M., 4,243,620, Cl. 264-45.100.

Commeyras, Auguste: *See—*
Pascal, Robert; Lasperas nee Marnier, Monique; Rousset, Alain; Commeyras, Auguste; Taillades, Jacques; and Mion, Louis, 4,243,814, Cl. 548-344.000.

Compagnie Industrielle des Telecommunications cit Alcatel: *See—*
Lemoussu, Michel; and Cardot, Claude, 4,243,956, Cl. 333-18.000.

Computervision Corporation: *See—*
Hansen, Magnus B.; and Novak, Walter T., 4,244,012, Cl. 362-216.000.

Cone, Irwin C.: *See—*
Hammel, Ronald O.; Barcus, William J.; and Cone, Irwin C., 4,244,011, Cl. 362-183.000.

Connoy, Thomas P.: *See—*
Bradshaw, Franklin C.; Connoy, Thomas P.; and Deutsch, Dennis A., 4,243,333, Cl. 400-158.000.

Conrad-Stork B.V.: *See—*
Fluks, Marten, 4,242,814, Cl. 37-66.000.

Cooper, Edward G.; Jeffers, Richard D.; and New, David M., to Carrier Corporation. Rooftop type air conditioner. 4,242,876, Cl. 62-89.000.

Cooper Industries, Inc.: *See—*
Clemenson, James T.; and Vincent, Robert R., 4,243,110, Cl. 173-104.000.

Cooper, Robin D. G.; Koppel, Gary A.; and McShane, Lawrence J., to Eli Lilly and Company. Process for 3β-aminoazetidin-2-ones. 4,243,587, Cl. 260-245.400.

Cornelius Company, The: *See—*
Strandwitz, Peter, 4,243,861, Cl. 200-159.00B.

Cornell, Alan: *See—*
Cartwright, William F.; Cornell, Alan; Higgins, D. Bernard; and Mikkelson, Robert P., 4,243,053, Cl. 131-4.00A.

Cornett, Jack E.; Saunders, Andrew A., Jr.; Marvin, Ira E.; and Beitler, Richard S., to United States of America, National Aeronautics and Space Administration. Integrated control system for a gas turbine engine. 4,242,864, Cl. 60-226.00R.

Coudurier, Maurice: *See—*
Donnet, Jean-Baptise; Baudru, Bernard; Coudurier, Maurice; and Vrisakis, Georges, 4,243,428, Cl. 106-288.00B.

Coulombe, Lionel J.: *See—*
Knowles, Warren D.; and Coulombe, Lionel J., 4,242,975, Cl. 112-226.000.

Coutts, Ian B. Ladders leveling device. 4,243,122, Cl. 182-200.000.

Coval, Arthur B.: *See—*
Lee, Arthur L.; and Coval, Arthur B., 4,243,126, Cl. 192-2.000.
Lee, Arthur L.; and Coval, Arthur B., 4,243,127, Cl. 192-4.00A.

Cox, Daniel E.: *See—*
Ahn, Kie Y.; and Cox, Daniel E., 4,243,476, Cl. 156-643.000.

Crane Packing Co.: *See—*
Baker, Dorsey L.; and Sedy, Josef, 4,243,230, Cl. 277-3.000.

Cranston Machinery Co., Inc.: *See—*
Moody, Jack M., 4,243,084, Cl. 144-39.000.

Creative Cartons of Ashland, Inc.: *See—*
Carver, Robert G., 4,242,818, Cl. 40-364.000.

Creusot-Loire: *See—*
Leroy, Pierre J.; Bastien, Jean P.; and Sprunck, Emile J., 4,243,211, Cl. 266-268.000.

Crockett, Thomas W.; Huehls, Patrick N.; and Slotnick, Barry G., to Baxter Travenol Laboratories, Inc. Cardiotomy reservoir. 4,243,531, Cl. 210-188.000.

Cronenberg, Richard A., to Becton, Dickinson and Company. Humidifier separator. 4,243,396, Cl. 55-238.000.

Crosbie, Richard J.; and Edwards, Paul R., to United States of America, Navy. G-Protection system sensing a change in acceleration and tilt angle. 4,243,024, Cl. 128-1.00A.

Cross, Peter E.: *See—*
Barnish, Ian T.; Cross, Peter E.; and Dickinson, Roger P., 4,243,672, Cl. 424-274.000.

Crouse, John C.: *See—*
Degeneff, Robert C.; and Crouse, John C., 4,243,966, Cl. 336-70.000.

Crowley, Charles F.; and Pratt, Albert R., to Raytheon Company. Clamp-plug type connector. 4,243,285, Cl. 339-32.00R.

Cruz, Jose C., to Cummins Engine Company, Inc. Electro-optical target for an optical alignment system. 4,243,877, Cl. 250-201.000.

Cummins Engine Company, Inc.: *See—*
Cruz, Jose C., 4,243,877, Cl. 250-201.000.
Flynn, Patrick F.; Weber, Harold G.; and Mulloy, John M., 4,243,357, Cl. 415-215.000.
Stang, John H.; and Johnson, Kenneth A., 4,242,948, Cl. 92-212.000.

Curetti, Ennio G.; and Collombin, Andre M., to Motosacoche S.A. Method of manufacturing an object in plastics material and object obtained thereby. 4,243,620, Cl. 264-45.100.

Curinier, Jean; and Vandermarliere, Charles, to Les Fils d'Auguste Chomarat & Cie. Apparatus for the manufacture of non-woven textile fabrics. 4,242,779, Cl. 28-101.000.

Curtiss-Wright Corporation: *See—*
Harrison, Emmett S.; and Leto, Anthony, 4,242,865, Cl. 60-242.000.

Cuscurida, Michael: *See—*
McDaniel, Kenneth G.; Rice, Doris M.; and Cuscurida, Michael, 4,243,760, Cl. 521-176.000.

Czuszak, Charles C., to Carrier Corporation. Bearing and lubrication system. 4,243,275, Cl. 308-128.000.

Dages, Daniel, to Saint-Gobain Industries. Alkyl alkylaryl adipate plasticizers for polyvinyl butyral. 4,243,572, Cl. 260-31.80R.

Dahlgren, Britt I.: *See—*
Arnstrom, Anders P.; Dahlgren, Lennart K.; and Dahlgren, Britt I., 4,242,829, Cl. 46-91.000.

Dahlgren, Lennart K.: *See—*
Arnstrom, Anders P.; Dahlgren, Lennart K.; and Dahlgren, Britt I., 4,242,829, Cl. 46-91.000.

Dai Nippon Toryo Co., Ltd.: *See—*
Nishino, Sakae; Sakakibara, Takao; and Okazaki, Haruhiko, 4,243,565, Cl. 260-22.0CQ.

Daikin Kogyo Co., Ltd.: *See—*
Tatemoto, Masayoshi; Suzuki, Takeshi; Tomoda, Masayasu; Furukawa, Yasuyoshi; and Ueta, Yutaka, 4,243,770, Cl. 525-331.000.

Daimler-Benz Aktiengesellschaft: *See—*
Scholz, Hansjugen; Backhaus, Hans-Gerd; and Brambilla, Luigi, 4,243,248, Cl. 280-735.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Yamada, Mitsuhiko, 4,244,004, Cl. 358-138.000.

Dake, James D.: *See—*
Alley, Bernard J.; Dake, James D.; and Dykes, Hiram W. H., 4,243,444, Cl. 149-98.000.

Daniel, Sam M.; and Peterson, Kenneth M., to Motorola, Inc. Regulated suppressed carrier modulation system. 4,243,955, Cl. 332-37.00D.

Daniels, Nicholas R., to Emerson Electric Co. Apparatus for and method of in situ application of lubricant to a wick. 4,243,079, Cl. 141-1.000.

Danilewicz, John C.: *See—*
Campbell, Simon F.; Danilewicz, John C.; Greengrass, Colin W.; and Plews, Rhona M., 4,243,666, Cl. 424-248.540.

Dankese, Joseph P. Electrochemical apparatus. 4,243,508, Cl. 204-301.000.

Data General Corporation: *See—*
Saxena, Arjun N., 4,243,865, Cl. 219-121.00P.

D'Atre, John D., to General Electric Company. Gain normalization technique for controlled current induction motor system. 4,243,927, Cl. 318-803.000.

Dauwalder, Fred R., to Caterpillar Tractor Co. Tree harvester. 4,243,258, Cl. 294-88.000.

Davcheva, Nadejda G.: *See—*
Denev, Stoyan I.; and Davcheva, Nadejda G., 4,243,520, Cl. 209-10.000.

Davis, Alden B. Bicycle reflector and splash guard. 4,243,241, Cl. 280-158.100.

Davitz, Walter E., to Production Plus Corporation. Custom changeable hanging rack for finishing system. 4,243,146, Cl. 211-118.000.

Dayco Corporation: *See—*
Benkelman, William D.; and Carlyon, George C., 4,242,849, Cl. 52-741.000.
Richmond, Kenneth D.; Miranti, Joseph P., Jr.; and Henderson, Dewey D., 4,243,452, Cl. 156-138.000.

Dayton-Walther Corporation: *See—*
Walther, William D.; and DeRegnaucourt, Robert A., 4,243,269, Cl. 301-12.00R.

de la Burde, Roger Z.; and Aument, Patrick E., to Philip Morris Incorporated. Method for uniform incorporation of additives into tobacco. 4,243,056, Cl. 131-140.00B.

de Angelis, Henri, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Method and apparatus for drying a thick wet layer coated on one face of a cardboard sheet. 4,242,805, Cl. 34-1.000.

DeBlois, Raymond L., to United Technologies Corporation. Precompression fin for axisymmetric inlet on winged high speed vehicles. 4,243,188, Cl. 244-53.00B.

deBoer, Fred L., to deBoer, Sherry Miles. Firearm mechanism. 4,242,825, Cl. 42-1.00R.

deBoer, Sherry Miles: *See—*
deBoer, Fred L., 4,242,825, Cl. 42-1.00R.

DeCaprio, Vincent; and Sanderson, George, to Becton, Dickinson and Company. Catheter delivery system. 4,243,033, Cl. 128-214.400.

Deconinck, Didier, to Allibert Exploitation, Societe Anonyme. Furniture assembly with synthetic resin members. 4,243,280, Cl. 312-140.000.

DeCoursey, Calvin H., to Lynch Communication Systems, Inc. Method and means for transmitting low speed signals over a PCM framing code. 4,243,930, Cl. 370-110.000.

DeFilippis, John: *See—*
Feinberg, Martin H.; DeFilippis, John; and Wong, Ting W., 4,243,845, Cl. 179-90.00B.

Degeneff, Robert C.; and Crouse, John C., to General Electric Company. Electrostatic shielding of nonsequential disc windings in transformers. 4,243,966, Cl. 336-70.000.

dela Cruz, Moises A., to Rosemount Inc. Current isolator. 4,243,931, Cl. 323-302.000.

Delattre-Levivier: *See—*
Gardon, Maurice, 4,243,344, Cl. 405-2.000.

Delbag-Luftfilter GmbH: *See—*
Neumann, Gerhard M.; and Karelin, Jochen, 4,243,486, Cl. 176-37.000.

Delfino, Michaelangelo; Gentile, Philip S.; Loiacono, Gabriel M.; and Smith, Wallace A., to North American Philips Corporation. Method for the synthesis of boracites. 4,243,642, Cl. 423-277.000.

Delory, Bernard; Fleury, Georges; and Kuntzmann, Jean-Claude, to Thomson-CSF. Circulating fluid cooled delay line for high frequency tubes, and high frequency tubes having such a delay line. 4,243,914, Cl. 315-3.500.

Demi, Roy C., to Robertshaw Controls Company. Fluid flow sensing switch device and method of making the same. 4,243,374, Cl. 431-89.000.

Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., to Buffalo Color Corporation. Process for the manufacture of 4,4' dihydroxydiphenyl. 4,243,822, Cl. 568-769.000.

Deneau, Myron E.: *See—*
Moore, Henry J., Jr.; and Deneau, Myron E., 4,243,194, Cl. 248-188.100.

Denev, Stoyan I.; and Davcheva, Nadejda G., to Knippi "Niproruda". Method for separation of large sized salt containing minerals. 4,243,520, Cl. 209-10.000.

Denki Onkyo Co., Ltd.: *See—*
Yoshikawa, Norio, 4,243,965, Cl. 335-213.000.

Densen, Mark S., to Eastern Packaging and Display Co. Knock down cabinet. 4,243,282, Cl. 312-259.000.

DePenti, Kenneth L., to Midland-Ross Corporation. Railroad car draft gear and coupler arrangement. 4,243,149, Cl. 213-62.00A.

DeRegnaucourt, Robert A.: *See—*
Walther, William D.; and DeRegnaucourt, Robert A., 4,243,269, Cl. 301-12.00R.

Deribas, Andrei A.; Limasov, Alexei I.; Matytsin, Alexei I.; Staver, Anatoly M.; Shebalin, Rudolf I.; and Yashin, Jury N. Method for joining fiberglass plastic rod to metal fitting of electrical device. 4,242,787, Cl. 29-421.00E.

DeSousa, Egas J. Hopping vehicle. 4,243,218, Cl. 272-114.000.

De Stefani, Giuseppe: *See—*
Genevois, Jean L.; Paolo, Presti; and De Stefani, Giuseppe, 4,243,381, Cl. 432-75.000.

Deutsch, Dennis A.: *See—*
Bradshaw, Franklin C.; Connoy, Thomas P.; and Deutsch, Dennis A., 4,243,333, Cl. 400-158.000.

Deutsches Krebsforschungszentrum: *See—*
Stohr, Michael, 4,243,318, Cl. 356-39.000.

Developak Corporation: *See—*
Evers, Jack R.; and Bauerkemper, Michael I., 4,243,469, Cl. 156-583.100.

DeVore, Wilfred H. Door opening apparatus for large overhead doors. 4,243,091, Cl. 160-189.000.

DG Shelter Products Company: *See—*
Kincaid, Thomas R., 4,243,394, Cl. 44-14.000.

Dholakia, Anil R., to RCA Corporation. Method for precision grinding of hard, pointed materials. 4,243,395, Cl. 51-293.000.

Dhondt, Roland O., to Union Oil Company of California. Shale retorting process and apparatus. 4,243,510, Cl. 208-11.00R.

Diamond Shamrock Corporation: *See—*
Lieb, Donald F.; and Suchanski, Mary R., 4,243,503, Cl. 204-290.00F.

DiBugnara, Raymond, to TRW Inc. High concentration phosphorosilica spin-on dopant. 4,243,427, Cl. 106-287.160.

Dickerson, Carroll D., to Ford Motor Company. Adjustable kingpin assembly. 4,243,339, Cl. 403-4.000.

Dickey, Frank R., Jr., to General Electric Company. Velocity measuring correlation sonar. 4,244,026, Cl. 364-565.000.

Dickinson, Roger P.: *See—*
Barnish, Ian T.; Cross, Peter E.; and Dickinson, Roger P., 4,243,672, Cl. 424-274.000.

Diebel, David A.: *See—*
Behrends, Bertwin E.; and Diebel, David A., 4,243,535, Cl. 210-315.000.

Diederich, Walter J., to Gillette Company, The. Catalytically heated curling device with improved ignition system. 4,243,017, Cl. 126-409.000.

Dietrich, Guenther: *See—*
Kukulies, Erwin; and Dietrich, Guenther, 4,242,896, Cl. 72-345.000.

Dietz, Richard E.: *See—*
Welch, Melvin B.; and Dietz, Richard E., 4,243,552, Cl. 252-429.00B.

Diller, Charles E., to Dresser Industries, Inc. Stop collar for tube expander. 4,242,893, Cl. 72-122.000.

Dillon, George A. Micro-dot identification. 4,243,734, Cl. 430-8.000.

DiMatteo, Albert: *See—*
Spaargaren, Robert; and DiMatteo, Albert, 4,243,125, Cl. 188-79.50P.

Dines, Martin B.: *See—*
Hall, Richard B.; Kaldor, Andrew; Kramer, George M.; and Dines, Martin B., 4,243,597, Cl. 260-347.800.

Dingler, Geoffrey L.; and Johnson, Philip P., to Whirlpool Corporation. Dishwasher soil separator. 4,243,431, Cl. 134-104.000.

Dixon Automatic Tool, Inc.: *See—*
Dixon, Paul H., 4,242,900, Cl. 72-345.000.

Dixon, Paul H., to Dixon Automatic Tool, Inc. Barts unloading mechanism. 4,242,900, Cl. 72-345.000.

Dixon, Rita M.: *See—*
Wright, Ralph J., 4,243,259, Cl. 294-1.00B.

Dlabac, Antonin: *See—*
Protiva, Miroslav; Rajsner, Miroslav; Sindelar, Karel; Jilek, Jiri; Bartl, Vaclav; Metysova, Jirina; Dlabac, Antonin; Langsadl, Leon; Pomykacek, Josef; and Miksik, Frantisek, 4,243,805, Cl. 544-375.000.

Dob, Allan M.: *See—*
Beckerman, Howard L.; Pepe, Russell J.; and Dob, Allan M., 4,242,976, Cl. 112-264.100.

Dobler, Rudolf; and Weber, Klaus, to AGFA-Gevaert, A.G. Apparatus for detecting holes in webs of photographic paper or the like. 4,243,891, Cl. 250-571.000.

Dobler, Steve: *See—*
Fondiller, Robert; Grund, Christian; Dobler, Steve; and Braun, Michael, 4,244,040, Cl. 368-69.000.

Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG: *See—*
Lehnhoff, Kurt; and Schael, Wilfried, 4,243,530, Cl. 210-137.000.

Dr. Ing. h.c.F. Porsche Aktiengesellschaft: *See—*
Trenkler, Werner, 4,243,261, Cl. 296-213.000.

Dr. Ing. Manfrid Dreher GmbH & Co. K.G.: *See—*
Dreher, Manfrid, 4,242,838, Cl. 51-164.200.

Dr.-Ing. Rudolf Hell GmbH: *See—*
Jurgensen, Heinrich, 4,244,005, Cl. 358-201.000.

Dr. Johannes Heidenhain GmbH: *See—*
Ernst, Alfons, 4,243,325, Cl. 356-372.000.

Dodge, Colmant Cuvelier: *See—*
Bonnel, Michel G., 4,243,180, Cl. 241-79.200.

Dollard, Richard M.: *See—*
Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., 4,243,822, Cl. 568-769.000.

DoMinH, Thap, to Eastman Kodak Company. Image forming composition and elements with Co(III) complex, conjugated π bonding compounds and photoreductant. 4,243,737, Cl. 430-170.000.

Donahue, Donald T.: *See—*
Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., 4,243,822, Cl. 568-769.000.

Donaldson Company, Inc.: *See—*
Tokar, Joseph C.; and Janezich, Frank A., 4,243,397, Cl. 55-487.000.

Donnet, Jean-Baptise; Baudru, Bernard; Coudurier, Maurice; and Vrisakis, Georges. Processes for the manufacturing of precipitated silica. 4,243,428, Cl. 106-288.00B.

Donofrio, Frank C.: *See—*
Miller, Bruce J.; Gadonas, Gus C.; and Donofrio, Frank C., 4,243,890, Cl. 250-551.000.

Dornan, Brian R.: *See—*
Wolkstein, Herbert J.; Dornan, Brian R.; and Goel, Jitendra, 4,243,951, Cl. 331-94.50H.

Dorst-Keramikmaschinen-Bau Otto Dorst und Dipl.-Ing. Walter Schlegel: *See—*
Schaidl, Hubert; and Leingartner, Josef, 4,242,968, Cl. 108-20.000.

Dory, Alain, to Celette S.A. Equipment unit for checking deformations of a vehicle body. 4,242,803, Cl. 33-288.000.

Douren, Lars: *See—*
Broberg, Hans; and Douren, Lars, 4,243,477, Cl. 159-13.00A.

Dow Chemical Company, The: *See—*
Birkelbach, Donald F.; and Knight, George W., 4,243,785, Cl. 526-115.000.
Chiao, Cherry C., 4,243,577, Cl. 260-42.470.
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Lefevre, Lloyd E.; and Wegenka, Mark A., 4,243,366, Cl. 425-303.000.
Martin, Charles W.; and Ward, Eldon L., 4,243,675, Cl. 424-286.000.
Moore, Eugene R.; and Kowalczyk, John S., 4,243,491, Cl. 203-2.000.
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Haluska, Loren A., 4,243,722, Cl. 428-450.000.

Draber, Wilfried: *See—*
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; and Plempel, Manfred, 4,243,670, Cl. 424-269.000.

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Drake, Charles A.; and Murtha, Timothy P., to Phillips Petroleum Company. Cobalt-gold promoter for ruthenium hydrogenation catalyst as in hydrogenation of unsaturated dinitriles. 4,243,610, Cl. 564-491.000.

Drake, Miles P.; and Hughes, Sarah Y., to International Standard Electric Corporation. Apparatus for metal coating of powders. 4,242,982, Cl. 118-716.000.

Dreher, Manfrid, to Dr. Ing. Manfrid Dreher GmbH & Co. K.G. Centrifugal drum apparatus. 4,242,838, Cl. 51-164.200.

Dressel, Thomas D.: *See—*
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Dresser Europe S.A.: *See—*
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Dschen, Yuan-Heng, to BBC Brown, Boveri & Company, Limited. Open-end spinning device. 4,242,858, Cl. 57-58.890.

Dudley, Phillip J.: *See—*
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Dugger, Charles B., Jr., to Minneapolis Electric Steel Castings Company. Liner assembly for ball mills. 4,243,182, Cl. 241-153.000.

Dumas, David H., to Hercules Incorporated. Sizing compositions. 4,243,481, Cl. 162-158.000.

Dunham-Bush, Inc.: *See—*
Shaw, David N., 4,242,872, Cl. 62-2.000.

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Ciganek, Engelbert, 4,243,668, Cl. 424-258.000.
Elsner, Gotz; Legler, Rudolf F.; and Popovici, Margarete, 4,243,748, Cl. 430-600.000.
Fang, James C.; and Krespan, Carl G., 4,243,504, Cl. 204-296.000.
Fremont, Joseph M.; and Garnett, Donald I., 4,243,593, Cl. 260-346.110.
Gale, David M., 4,243,580, Cl. 260-45.8NT.
Mack, Rodney L., 4,243,974, Cl. 340-347.0NT.
Manwiller, Carl H., 4,243,574, Cl. 260-37.00N.
Simms, John A., 4,243,573, Cl. 260-33.6UA.

Durastone Co.: *See—*
Beretta, Angelo V., 4,243,198, Cl. 249-66.00R.

Dushku, Victor A. Log breaking device. 4,243,205, Cl. 254-113.000.

Duttweiler, Donald L., to Bell Telephone Laboratories, Incorporated. Adaptive filter with tap coefficient leakage. 4,243,959, Cl. 333-166.000.

Dwyer, Robert M., to Massey-Ferguson Inc. Hydraulic braking system. 4,243,271, Cl. 303-7.000.

Dykes, Hiram W. H.: *See—*
Alley, Bernard J.; Dake, James D.; and Dykes, Hiram W. H., 4,243,444, Cl. 149-98.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Lenz, Arnold; Kreuzburg, Gerhard; and Haase, Rainer, 4,243,422, Cl. 106-52.000.

E. R. Squibb & Sons, Inc.: *See—*
Chao, Sam T.; and Varma, Ravi K., 4,243,586, Cl. 260-239.55R.
Harris, Don N.; Phillips, Marie B.; and Greenberg, Roland, 4,243,671, Cl. 424-273.00R.
Krapcho, John, 4,243,804, Cl. 544-162.000.
Varma, Ravi K.; and Vogt, B. Richard, 4,243,608, Cl. 260-501.110.

Earle, Michael; and Lenzen, Glenn H., to Caterpillar Tractor Co. Apparatus for fusibly bonding a coating material to a metal article. 4,243,867, Cl. 219-121.0LC.

Eastern Packaging and Display Co.: *See—*
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Eastman Kodak Company: *See—*
DoMinH, Thap, 4,243,737, Cl. 430-170.000.
Edwards, Evan A., 4,243,850, Cl. 369-46.000.
Garbe, William F.; and Wrobel, Joseph J., 4,243,317, Cl. 355-91.000.
Gilman, Paul B., Jr.; and Haase, Jan R., 4,243,738, Cl. 430-202.000.
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Eaton Corporation: *See—*
Kuntner, Richard J.; and Van der Meer, James C., 4,243,894, Cl. 307-147.000.

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Echlin Manufacturing Company, The: *See*—
Bliven, Andrew W., II; and Kindlmann, Peter J., 4,243,938, Cl. 324-169.000.
Eckert, Kim, to Motorola, Inc. Differential amplifier. 4,243,945, Cl. 330-253.000.
Economics Laboratory, Inc.: *See*—
Guilbert, C. Carol; and Scepanski, William H., 4,243,543, Cl. 252-105.000.
Edington, Edwin T.; and White, Alan C., to John Wyeth & Brother Limited. 4-Pyridinamine derivatives. 4,243,808, Cl. 546-285.000.
Edmisten, John H. Stabilizing hitch. 4,243,243, Cl. 280-446.00B.
Edwards, Evan A., to Eastman Kodak Company. Apparatus for tracking a record track on a video disc. 4,243,850, Cl. 369-46.000.
Edwards, Paul R.: *See*—
Crosbie, Richard J.; and Edwards, Paul R., 4,243,024, Cl. 128-1.00A.
Egami, Kazuhito: *See*—
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,243,902, Cl. 310-154.000.
Eger, Gerlind; and Leal Lara, Hermilo. Process for preparing monokaryons by dedikaryotizing dikaryotic strains of Basidiomycetes. 4,242,832, Cl. 47-1.100.
Egger, Paul R. Typewriter cabinet. 4,243,281, Cl. 312-208.000.
Eguchi, Masuichi: *See*—
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Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefko, Bela; and Kis-Tamas, Attila, 4,243,660, Cl. 424-84.000.
Ehrenfels, Alfred L., to Harvey Hubbell, Incorporated. Non-rigid mechanical coupling for a fire-rated feed-through fitting and method of making. 4,243,835, Cl. 174-48.000.
Ehrhardt, William M.; and Haury, Earl J., to Shell Oil Company. Selective ignition timing. 4,243,007, Cl. 123-419.000.
Eickmann, Karl. Snapring. 4,242,775, Cl. 24-16.00R.
Eirich, Gustav: *See*—
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Eirich, Wilhelm; and Eirich, Gustav, to Eirich, Wilhelm; and Eirich, Gustav. Preparation and crushing tool. 4,243,183, Cl. 241-186.200.
Eisenhardt, William A., Jr.; Hedaya, Eddie; and Theodoropulos, Spyros, to Union Carbide Corporation. Novel isocyanates. 4,243,605, Cl. 556-414.000.
Eisner, Jeffrey W. Dental dowel pin placement apparatus. 4,243,389, Cl. 433-74.000.
Ekins, Roger P.; and Soini, Erkki, to LKB-Produkter AB. Method for measuring time determination in a radiation measuring instrument. 4,243,880, Cl. 250-252.000.
Elder, Eugene E. Bow and hinge mounting assembly for eyeglasses frames. 4,243,305, Cl. 351-121.000.
Elder, Joseph T. Method and apparatus for preserving protein in animal droppings. 4,242,809, Cl. 34-33.000.
Electronics Corporation of America: *See*—
Cade, Phillip J., 4,243,372, Cl. 431-31.000.
Electronique Marcel Dassault: *See*—
Bertholon, Philippe P., 4,243,837, Cl. 179-1.0VC.
Elfarr, Johnnie A. Method and apparatus for flowing fluid from a plurality of interconnected wells. 4,243,102, Cl. 166-314.000.
Eli Lilly and Company: *See*—
Cooper, Robin D. G.; Koppel, Gary A.; and McShane, Lawrence J., 4,243,587, Cl. 260-245.400.
Paget, Charles J.; and Wikel, James H., 4,243,813, Cl. 548-306.000.
Spitzer, Wayne A.; and Goodson, Theodore, Jr., 4,243,588, Cl. 260-245.400.
Elion, Glenn R., to International Communications and Energy, Inc. Optical wavelength division multiplexer mixer-splitter. 4,243,297, Cl. 350-96.150.
Ellingson, Dennis L.; Niles, Paul D.; Normann, Richard W.; and Wiklow, Theodore L., to Bendix Corporation, The. Method of making an electrical connector contact. 4,242,790, Cl. 29-879.000.
Elliott, Lloyd E., Jr.; and Hudson, John L., to Texaco Inc. Fail-safe mechanism for generating a pulse indicating the precise moment of firing of an air gun. 4,243,116, Cl. 181-118.000.
Ellison, John D. Bowling ball gauge. 4,242,801, Cl. 33-174.00F.
Elsner, Gotz; Legler, Rudolf F.; and Popovici, Margarete, to Du Pont de Nemours, E. I., and Company. Light-sensitive silver halide reproduction material. 4,243,748, Cl. 430-600.000.
Emerson Electric Co.: *See*—
Daniels, Nicholas R., 4,243,079, Cl. 141-1.000.
Fernstrom, Carl F.; and Visos, Charles D., 4,243,373, Cl. 431-66.000.
Endo, Masaki: *See*—
Lim, Gary M. F.; and Endo, Masaki, 4,243,803, Cl. 544-26.000.
Energy for Independence, Inc.: *See*—
Ryerson, John D., 4,243,631, Cl. 422-90.000.
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Savolainen, Jaakko; Engdahl, Holger; Luukkainen, Yrjo; Tolvanen, Martti; and Surakka, Jorma, 4,243,533, Cl. 210-247.000.
Engel, John F., to FMC Corporation. Insecticidal perhaloalkylvinylcyclopropanecarboxylates. 4,243,677, Cl. 424-305.000.
Engel, Joseph C.; Vercellotti, Leonard C.; and Schroeder, Dale W., to Westinghouse Electric Corp. Background light intensity compensation circuit for a line scan camera system. 4,243,876, Cl. 235-455.000.
Engel, Stephen A., to Union Carbide Corporation. Instantaneous scarfing by means of a pilot puddle. 4,243,436, Cl. 148-9.500.
Engelhard Minerals & Chemicals Corporation: *See*—
Bartholic, David B., 4,243,514, Cl. 208-91.000.
Engineered Yarns, Inc.: *See*—
Worrall, James D.; and Auger, Suzanne M., 4,243,713, Cl. 428-245.000.
English Electric Valve Company Limited: *See*—
Nixon, Ralph D., 4,243,986, Cl. 340-756.000.
Enomoto, Tadao; and Ito, Nobuo, to Citizen Watch Co., Ltd. Display device for electronic timepieces. 4,243,303, Cl. 350-345.000.
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Savolainen, Jaakko; Engdahl, Holger; Luukkainen, Yrjo; Tolvanen, Martti; and Surakka, Jorma, 4,243,533, Cl. 210-247.000.
Environmental Dynamics, Inc.: *See*—
Tharp, Charles E.; and Campbell, Clark M., 4,243,521, Cl. 210-626.000.
Environmental Research Institute of Michigan: *See*—
Maes, Reed E., Jr., 4,242,833, Cl. 47-17.000.
EPP Corp.: *See*—
Lennon, Donald J. J.; and Clapp, Roger E., 4,243,726, Cl. 428-545.000.
Equipment Company of America: *See*—
Garcia, Jose M., 4,243,354, Cl. 414-607.000.
Ernst, Alfons, to Dr. Johannes Heidenhain GmbH. Optical distance measuring instrument. 4,243,325, Cl. 356-372.000.
Eshelman, Robert W.; and Benjey, Robert P., to Chrysler Corporation. Pressure transducer. 4,242,914, Cl. 73-711.000.
Esker, Andrew T., to McDonnell Douglas Corporation. Missile director with beam axis shift capability. 4,243,187, Cl. 244-3.130.
Esmark, Incorporated: *See*—
Toussaint, Stephen M., 4,243,972, Cl. 340-146.3SY.
Ethyl Corporation: *See*—
Shubkin, Ronald L., 4,243,538, Cl. 252-51.50A.
Eustance, John W.; Hobbs, Stanley Y.; and Carley, Emilie L., to General Electric Company. Metallized textured surface polypropylene film. 4,243,708, Cl. 428-141.000.
Everard, John D., to Post Office, The. Delta sigma to PCM converter. 4,243,977, Cl. 340-347.0DD.
Evers, Jack R.; and Bauerkemper, Michael I., to Developak Corporation. Heat sealer mechanism. 4,243,469, Cl. 156-583.100.
Ewald, Ronald F., to Seaquist Valve Co., Div. of Pittway Corp. Continuous spray button. 4,243,161, Cl. 222-402.140.
Exxon Research and Engineering Company: *See*—
Burke, Oliver W., Jr., deceased, 4,243,566, Cl. 260-29.60R.
Gladrow, Elroy M.; Schuette, William L.; and Reid, Terry A., 4,243,557, Cl. 252-455.00Z.
Hall, Richard B.; Kaldor, Andrew; Kramer, George M.; and Dines, Martin B., 4,243,597, Cl. 260-347.800.
Jacobson, Allan J.; Chianelli, Russell R.; and Whittingham, M. Stanley, 4,243,624, Cl. 264-82.000.
Lockwood, Harry F.; and McGee, Thomas F., 4,243,744, Cl. 430-325.000.
Luckenbach, Edward C., 4,243,517, Cl. 208-164.000.
Luckenbach, Edward C., 4,243,518, Cl. 208-164.000.
Nazimek, Kenneth, 4,243,928, Cl. 320-2.000.
Schorfheide, James J., 4,243,519, Cl. 208-210.000.
Vandling, John M., 4,244,007, Cl. 358-257.000.
F. L. Smidth & Company: *See*—
Reinhardt, Erik, 4,243,384, Cl. 432-80.000.
Fafco, Inc.: *See*—
Rhodes, Richard O., 4,243,454, Cl. 156-162.000.
Fagniart, Gaston; and Lemaire, Jean-Pierre, to Societe Anonyme dite: Vacuum Capatainer International. Method and apparatus for sealing a tube of thermoplastics material by welding. 4,243,448, Cl. 156-73.500.
Faillon, Georges; and Carreyve, Claude, to Thomson-CSF. Apparatus for selecting the resonance frequency of a microwave device comprising a plurality of cavities. 4,243,961, Cl. 333-233.000.
Famos, Steno; Fasano, Fulvio; and Bassarutti, Alfredo, to Officine Meccaniche Danieli & C. SpA. Method and apparatus for shearing billets with hydraulic shears in continuous casting plant. 4,242,933, Cl. 83-37.000.
Fang, James C.; and Krespan, Carl G., to Du Pont de Nemours, E. I., and Company. Fluorovinyl ether polymers. 4,243,504, Cl. 204-296.000.
Farcasiu, Malvina; and Brandes, Susan D., to Mobil Oil Corporation. Antioxidant stabilized lubricant compositions. 4,243,539, Cl. 252-52.00R.
Farkas, Alexander, to Westinghouse Electric Corp. Reversing apparatus. 4,242,925, Cl. 74-792.000.
Farrar, Jack R.: *See*—
Pachmayr, Frank A.; and Farrar, Jack R., 4,242,824, Cl. 47-71.00P.
Fasano, Fulvio: *See*—
Famos, Steno; Fasano, Fulvio; and Bassarutti, Alfredo, 4,242,933, Cl. 83-37.000.

Faupel, Werner: *See*—
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Fedosov, Alexei Z.: *See*—
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Fehr, Rainer: *See*—
Burckhardt, Christoph B.; Grandchamp, Pierre-Andre; Hoffmann, Heinz; and Fehr, Rainer, 4,242,912, Cl. 73-626.000.
Feinberg, Martin H.; DeFilippis, John; and Wong, Ting W., to International Telephone and Telegraph Corporation. Repertory telephone dialing apparatus. 4,243,845, Cl. 179-90.00B.
Fenton, Aaron J.; and Scott-Ellis, E. J. O., to Fenton Company. Wire basket wheel assembly. 4,243,270, Cl. 301-37.0SS.
Fenton Company: *See*—
Fenton, Aaron J.; and Scott-Ellis, E. J. O., 4,243,270, Cl. 301-37.0SS.
Fenton, Donald M., to Union Oil Company of California. Method for removing hydrogen sulfide from gas streams. 4,243,648, Cl. 423-573.00R.
Fenwick, Robert B.: *See*—
Clinch, Marvin R.; Graf, Calvin R.; Martin, Paul E.; and Fenwick, Robert B., 4,244,053, Cl. 455-29.000.
Fenyes, Joseph G. E.; and Pera, John D., to Buckman Laboratories, Inc. Aminoalkylenephosphonic acids and salts thereof and their use in aqueous systems. 4,243,524, Cl. 210-700.000.
Ferm, Richard L., to Chevron Research Company. Calcium polysulfide soil stabilization method and compositions. 4,243,563, Cl. 260-17.00R.
Fernstrom, Carl F.; and Visos, Charles D., to Emerson Electric Co. Direct ignition gas burner control system. 4,243,373, Cl. 431-66.000.
Ferranti-Packard Limited: *See*—
Winrow, Donald, 4,243,978, Cl. 340-373.000.
Ferrary, Jean-Paul, to Wolber. Method of manufacturing tubeless tires for bicycles and motorcycles. 4,243,450, Cl. 156-123.00R.
Ferreira-Godinho, Manuel. Training device for practicing the service in tennis. 4,243,221, Cl. 273-29.00A.
Ferro Corporation: *See*—
Magrini, Kenneth H.; and Jones, Raymond B., 4,243,710, Cl. 428-208.000.
Finch, Robert A.: *See*—
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Finkel, Henry: *See*—
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Firestone Tire & Rubber Company, The: *See*—
Hergenrother, William L.; and Halasa, Adel F., 4,243,795, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., 4,243,796, Cl. 528-224.000.
Fischbeck, Kenneth H.: *See*—
Wright, Allen T.; and Fischbeck, Kenneth H., 4,243,995, Cl. 346-140.00R.
Fischer, Joseph; and Hoyt, John M., to National Distillers and Chemical Corp. Blends of ethylene-vinyl acetate copolymer rubbers with elastomers. 4,243,576, Cl. 260-42.150.
Fischer, Karl. Radiant heating unit. 4,243,874, Cl. 219-467.000.
Fischer, Karl Heinz: *See*—
Skubich, Otto; Perkert, Rudolf; and Fischer, Karl Heinz, 4,243,106, Cl. 172-804.000.
Fischer, Kurt: *See*—
Petersen, Harro; Fischer, Kurt; Klug, Hans; Trimborn, Werner; and Schmidt, Horst, 4,243,797, Cl. 528-239.000.
Fischer, Siegbert: *See*—
Pfalzer, Lothar; and Fischer, Siegbert, 4,243,478, Cl. 162-4.000.
Fisher Corporation: *See*—
Bell, Robert L., 4,243,264, Cl. 297-367.000.
Fleming, Raymond T.: *See*—
Kohl, Clyde B.; Kendrick, George B.; and Fleming, Raymond T., 4,243,907, Cl. 313-318.000.
Fleury, Georges, to Thomson-CSF. Delay line comprising coupled cavities and cooled by fluid-circulation. 4,243,915, Cl. 315-3.500.
Fleury, Georges: *See*—
Delory, Bernard; Fleury, Georges; and Kuntzmann, Jean-Claude, 4,243,914, Cl. 315-3.500.
Fluks, Marten, to Conrad-Stork B.V. Cutter wheel for a dredging apparatus. 4,242,814, Cl. 37-66.000.
Flynn, Patrick F.; Weber, Harold G.; and Mulloy, John M., to Cummins Engine Company, Inc. Turbomachine. 4,243,357, Cl. 415-215.000.
Flynn, Roy W.: *See*—
Grourke, Martin J.; and Flynn, Roy W., 4,243,416, Cl. 106-14.130.
Grourke, Martin J.; and Flynn, Roy W., 4,243,417, Cl. 106-14.130.
FMC Corporation: *See*—
Engel, John F., 4,243,677, Cl. 424-305.000.
Greenberg, Edward S., 4,243,525, Cl. 210-754.000.
Foley, William M., Jr. Styrene/hydroxy alkyl acrylic acid ester copolymer for contact lenses. 4,243,790, Cl. 526-320.000.
Fondiller, Robert; Grund, Christian; Dobler, Steve; and Braun, Michael, to Fondiller, Robert. Miniature electronic device construction. 4,244,040, Cl. 368-69.000.
Foote Mineral Company: *See*—
Brown, Patrick M.; and Boryta, Daniel A., 4,243,392, Cl. 23-295.00S.
Ford Motor Company: *See*—
Dickerson, Carroll D., 4,243,339, Cl. 403-4.000.
Foreman, Dave O. Tape storage and display apparatus. 4,243,142, Cl. 206-387.000.
Forenade Fabriksverken: *See*—
Tisell, Claes-Gustav E. Y.; Lundell, Karl E. B.; Horner, Sven H. N.; Thorstensson, Gustav Y.; and Karlstedt, Gustav S. E., 4,242,945, Cl. 92-26.000.
Forman, Donald B., to United States of America, Navy. Method and apparatus for fabricating a wideband whip antenna. 4,243,992, Cl. 343-873.000.
Formica Corporation: *See*—
Jaisle, Richard F.; and Bunkowski, Kenneth D., 4,243,461, Cl. 156-288.000.
Forney, Robert B. Ear cushioning device for headphones. 4,243,851, Cl. 179-156.00R.
Fortuna, John E., to Knape & Vogt Manufacturing Co. Ball bearing. 4,243,277, Cl. 308-195.000.
Forval S.A.: *See*—
Siepmann, Walter, 4,243,204, Cl. 251-366.000.
Fox, Richard J., to United States of America, Energy. Method for making an improved magnetic encoding device. 4,242,789, Cl. 29-446.000.
Fox, Richard J.: *See*—
Agouridis, Dimitrios C.; and Fox, Richard J., 4,243,885, Cl. 250-370.000.
Francis, Marion D., to Procter & Gamble Company, The. Gastrointestinal scanning agent. 4,243,652, Cl. 424-1.000.
Frank, James P., to General Electric Company. Thermostat and method of operating. 4,243,967, Cl. 337-340.000.
Franke, Hans-Jurgen: *See*—
Brockhaus, Rudolf; and Franke, Hans-Jurgen, 4,243,613, Cl. 568-482.000.
Franklin, Frederick C.; and Lewis, Robert A., to Chevron Research Company. Process for the production of a polymeric carbamate. 4,243,798, Cl. 528-371.000.
Franz, John E.: *See*—
Brannigan, Lawrence H.; Franz, John E.; and Schafer, David E., 4,243,406, Cl. 71-88.000.
Fraser, William A.; and Cieloszyk, Gary S., to Union Carbide Corporation. Process for making film from low density ethylene hydrocarbon copolymer. 4,243,619, Cl. 264-40.600.
Fraunhofer-Gesellschaft: *See*—
Scholze, Horst; and Schmidt, Helmut, 4,243,692, Cl. 427-2.000.
Freeborn, William D., to Osborne Industries, Inc. Animal actuated feeder. 4,242,985, Cl. 119-54.000.
Freeman, Carl D.; and Grover, Melvin G., to Logan Farm Equipment Co., Inc. Seed planting machines. 4,243,154, Cl. 221-253.000.
Fremont, Henry A.: *See*—
Mavis, Robert C., 4,243,564, Cl. 260-17.4ST.
Fremont, Joseph M.; and Garnett, Donald I., to Du Pont de Nemours, E. I., and Company. Preparation of furan compounds. 4,243,593, Cl. 260-346.110.
Frenzel, Claus-Dieter: *See*—
Heeb, Dieter; Bergemann, Uwe; and Frenzel, Claus-Dieter, 4,243,548, Cl. 252-305.000.
Freyer, Erwin; Steinwart, Johannes; and Will, Peter, to Audi NSU Auto Union Aktiengesellschaft. Fuel injection system for an internal combustion engine. 4,243,002, Cl. 123-325.000.
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Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, to Hoffmann-La Roche Inc. Triazolobenzazepines and processes for their production. 4,243,589, Cl. 260-245.500.
Fuji Photo Film Co., Ltd.: *See*—
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Hirano, Shigeo, 4,243,739, Cl. 430-266.000.
Nakamura, Kotaro; Adachi, Keiichi; and Ogawa, Akira, 4,243,747, Cl. 430-551.000.
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Watanabe, Kenji; and Akashi, Goro, 4,242,783, Cl. 29-132.000.
Fujikura, Nobuyuki; Noomi, Makoto; and Ihara, Hirokazu, to Hitachi, Ltd. Data communication method and apparatus therefor. 4,244,051, Cl. 375-17.000.
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Fujita, Masanori: *See—*
Samejima, Toshihide; Moritani, Nakanobu; Oda, Hajime; and Fujita, Masanori, 4,244,042, Cl. 368-73.000.
Fujitsu Limited: *See—*
Hattori, Akira, 4,244,033, Cl. 364-900.000.
Fujiwara, Hiroshi: *See—*
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Fujiwara, Sigeharu: *See—*
Mayumi, Masakatsu; Mitooka, Kenji; and Fujiwara, Sigeharu, 4,243,457, Cl. 156-245.000.
Fukuda, Mamoru. Hygienic cleaning apparatus. 4,242,764, Cl. 4-420.400.
Fukuhara, Tetsukazu, to Neturen Company Ltd. Method for continuously forming a coating layer on unbonded PC steel bars. 4,243,447, Cl. 156-64.000.
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Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Okawa, Masahisa, 4,243,786, Cl. 526-137.000.
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Fukuyama, Tatsuo: *See—*
Takahashi, Kenichi; Fukuyama, Tatsuo; Ueno, Takafumi; Shimada, Yasuomi; and Ishii, Shinichiro, 4,243,839, Cl. 179-1.00F.
Fuller, Orville A. Hook assembly for retrieving marine vessel towing lines. 4,242,978, Cl. 114-253.000.
Funke, Siegfried: *See—*
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Furukawa, Yasuyoshi: *See—*
Tatemoto, Masayoshi; Suzuki, Takeshi; Tomoda, Masayasu; Furukawa, Yasuyoshi; and Ueta, Yutaka, 4,243,770, Cl. 525-331.000.
Futamura, Shoji: *See—*
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Futamura, Yoshisumi: *See—*
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Futurecraft Corporation: *See—*
Piet, Meyer; and Castor, James J., 4,243,069, Cl. 137-484.600.
G. L. Rexroth GmbH: *See—*
Bartholomaus, Reiner; Bernhardt, Karl-Heinz; Eberhard, Wolfgang; Kokus, Hans-Dieter; Lembke, Herbert; and Schulte, Heinz, 4,242,942, Cl. 91-358.00R.
G.O.R. Applicazioni Speciali S.p.A.: *See—*
Cesano, Franco, 4,243,456, Cl. 156-214.000.
Gabbard, James D., to Monsanto Company. Stain-resistant vinyl chloride polymer compositions plasticized with alkylbenzyl succinates, glutarates or mixtures thereof. 4,243,571, Cl. 260-31.80H.
GAC International, Inc.: *See—*
Kawaguchi, Kozo, 4,243,386, Cl. 433-9.000.
Gadonas, Gus C.: *See—*
Miller, Bruce J.; Gadonas, Gus C.; and Donofrio, Frank C., 4,243,890, Cl. 250-551.000.
Gahmig, Herbert M., to BASF Wyandotte Corporation. Expandable polystyrene with stabilized cell structure. 4,243,717, Cl. 428-402.000.
Gala, Babulal V., to GTE Automatic Electric Laboratories Incorporated. Automatic restoral mechanism for a pushbutton key telephone instrument. 4,243,847, Cl. 179-99.00R.
Gale, David M., to Du Pont de Nemours, E. I., and Company. Elastomeric copolyether-ester/polyoxymethylene. 4,243,580, Cl. 260-45.8NT.
Galimov, Anas G.; Gelfand, Mikhail L.; Goldshtein, Boris G.; Kilin, Viktor E.; Sutyagin, Oleg Y.; Tsipenjuk, Yakov I.; Antipov, Georgy A.; and Yankovsky, Oleg A. Pneumatic inpact wrench having rotatable and axially translatable components. 4,243,108, Cl. 173-93.000.
Galtier, Daniel J. M.: *See—*
Purcell, Thomas A.; Shroot, Braham; and Galtier, Daniel J. M., 4,243,665, Cl. 424-246.000.
Galuskin, Vadim B.: *See—*
Lipets, Adolf U.; Krasnov, Boleslav M.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; Galuskin, Vadim B.; Lafa, Jury I.; Alexandrov, Boris I.; and Gromov, Gennady V., 4,243,096, Cl. 165-134.0DP.
Ganter, Wolfgang; Ginter, Albert; King, Josef; and Riis, Peter, to Gebruder Junghans GmbH. Watch having adjustable date and day indicators. 4,244,038, Cl. 368-35.000.
Garabedian, Armen. Apparatus for making a stress-free plastic article. 4,243,368, Cl. 425-405.00R.
Garbe, William F.; and Wrobel, Joseph J., to Eastman Kodak Company. Contact printing apparatus. 4,243,317, Cl. 355-91.000.
Garcia, Barbara A.: *See—*
Henrick, Clive A.; and Garcia, Barbara A., 4,243,819, Cl. 562-433.000.
Garcia, Jose M., to Equipment Company of America. Drum lifter for fork lift truck. 4,243,354, Cl. 414-607.000.
Garconnet, Michel J.: *See—*
Bourard, Daniel P. J.; and Garconnet, Michel J., 4,242,777, Cl. 24-115.00A.
Gardner, Mark R.: *See—*
Carroll, Arthur B.; Lazarevich, Vladeta D.; and Gardner, Mark R., 4,243,879, Cl. 250-221.000.
Gardon, Maurice, to Delattre-Levivier. Installation for conveyance of a boat. 4,243,344, Cl. 405-2.000.
Garlock Inc.: *See—*
Repella, James A., 4,243,232, Cl. 277-37.000.
Garnett, Donald I.: *See—*
Fremont, Joseph M.; and Garnett, Donald I., 4,243,593, Cl. 260-346.110.
Garrett, Michael E., to BOC Limited. Apparatus for removing gas from a liquid. 4,243,065, Cl. 137-171.000.
Gash, Duggan J., to Koninklijke Emballage Industrie Van Leer B.V. Method of producing cross laminates. 4,243,463, Cl. 156-324.000.
Gaster, Laramie M.: *See—*
Goudie, Alexander C.; and Gaster, Laramie M., 4,243,682, Cl. 424-331.000.
Gates Rubber Company, The: *See—*
Hammel, Ronald O.; Barcus, William J.; and Cone, Irwin C., 4,244,011, Cl. 362-183.000.
Gebruder Heller Verwaltungsgesellschaft mit beschrankter Haftung: *See—*
Kleine, Werner, 4,243,113, Cl. 175-410.000.
Gebruder Junghans GmbH: *See—*
Ganter, Wolfgang; Ginter, Albert; King, Josef; and Riis, Peter, 4,244,038, Cl. 368-35.000.
Geerkens, Friedhelm. Heat-exchanger element for a freeze drier. 4,242,877, Cl. 62-93.000.
Gelfand, Mikhail L.: *See—*
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Gemmani, Giuseppe. Planer with noise-reducing means. 4,243,085, Cl. 144-230.000.
General Atomic Company: *See—*
Graham, Weldon C., 4,243,868, Cl. 219-125.110.
General Binding Corporation: *See—*
Giulie, Joe D., 4,243,458, Cl. 156-247.000.
General Electric Company: *See—*
Abolins, Visvaldis; and Lee, Gim F., Jr., 4,243,766, Cl. 525-92.000.
Chamberlain, Harvey H., 4,242,989, Cl. 122-451.00R.
Clapp, Keith A.; and Stewart, Donald A., 4,243,347, Cl. 407-15.000.
D'Atre, John D., 4,243,927, Cl. 318-803.000.
Degeneff, Robert C.; and Crouse, John C., 4,243,966, Cl. 336-70.000.
Dickey, Frank R., Jr., 4,244,026, Cl. 364-565.000.
Eustance, John W.; Hobbs, Stanley Y.; and Carley, Emilie L., 4,243,708, Cl. 428-141.000.
Frank, James P., 4,243,967, Cl. 337-340.000.
Grossman, Leonard N.; Portis, Alan M.; Bernatowicz, Henry; and Schoenig, Frederick C., Jr., 4,243,939, Cl. 324-201.000.
Kewley, Norman E.; and Smetana, Andrew, 4,243,371, Cl. 431-13.000.
Kresge, James S., 4,243,622, Cl. 264-66.000.
Mark, Victor; and Wilson, Phillip S., 4,243,570, Cl. 260-30.200.
Myers, Donald C.; and Wilson, Phillip S., 4,243,575, Cl. 260-37.0PC.
Schroeter, Siegfried H.; and Olson, Daniel R., 4,243,720, Cl. 428-412.000.
Smith, Donald F.; and Ostrelich, Michael J., 4,243,287, Cl. 339-99.00R.
Steigerwald, Robert L., 4,244,017, Cl. 363-138.000.
Wotowiec, Joseph P., 4,244,013, Cl. 362-216.000.
Ziemba, Richard T., 4,242,963, Cl. 102-236.000.
General Instrument Corporation: *See—*
Multani, Jagir S.; and Sandhu, Jagtar S., 4,243,937, Cl. 324-158.00T.
General Motors Corporation: *See—*
Glennon, Timothy P., 4,243,947, Cl. 330-284.000.
Kabay, Steve; and Nemecek, Ralph E., 4,243,341, Cl. 403-16.000.
Schertz, Burtron D.; and Aldridge, Frederick A., 4,243,954, Cl. 331-117.00R.
Short, William T., 4,243,792, Cl. 528-73.000.
General Tire & Rubber Company, The: *See—*
Kirksey, J. Frank, 4,242,861, Cl. 57-120.000.
Genese, Joseph N., to Abbott Laboratories. Intravenous pump filter protector. 4,243,031, Cl. 128-214.00E.
Genevois, Jean L.; Paolo, Presti; and De Stefani, Giuseppe. Continuous ring furnaces. 4,243,381, Cl. 432-75.000.
Gentile, Philip S.: *See—*
Delfino, Michaelangelo; Gentile, Philip S.; Loiacono, Gabriel M.; and Smith, Wallace A., 4,243,642, Cl. 423-277.000.
Georgian, Michael T. Adjustable precision grinding and machinist vise. 4,243,213, Cl. 269-137.000.
Gericke, Rolf; Rogalski, Werner; Bergmann, Rolf; Hameister, Walter; and Wahlig, Helmut, to Merck Patent Gesellschaft mit beschrankter Haftung. Pyridone-acetic acid derivative. 4,243,810, Cl. 546-295.000.
Gerrard Industries Limited: *See—*
Sansum, Robert D., 4,243,077, Cl. 140-93.400.
Gerry, Frank S.: *See—*
Wiggins, Wayne T.; and Gerry, Frank S., 4,243,725, Cl. 428-517.000.
Gershbein, George. Jewelry smoking device. 4,243,058, Cl. 131-171.00R.
Gewerkschaft Eisenhutte Westfalia: *See—*
Lobbe, Armin; and Grisebach, Hans-Th., 4,243,268, Cl. 299-32.000.

Giacino, Christopher: *See*—
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Giani, Adolfo: *See*—
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Gibb, William D., to Northern Telecom Limited. Telephone line circuit. 4,243,842, Cl. 179-18.0FA.
Gibbons, James F. Forming controlled inset regions by ion implantation and laser bombardment. 4,243,433, Cl. 148-1.500.
Gibbs, David J. Exercising apparatus. 4,243,217, Cl. 272-73.000.
Gibson, Jack E. Method of powder coating the inside of pipes with a continuous film of plastic material. 4,243,699, Cl. 427-183.000.
Gieseking, Darrell. Convertible bed for pick-up truck camper or the like. 4,243,260, Cl. 296-24.00R.
Gilbert, Everett E., to United States of America, Army. Process for producing hexanitrostilbene. 4,243,614, Cl. 568-931.000.
Gilles, Jack C., to B. F. Goodrich Company, The. Hydroxyl-containing liquid polymers and pressure-sensitive adhesives prepared therefrom. 4,243,789, Cl. 526-263.000.
Gillette Company, The: *See*—
Diederich, Walter J., 4,243,017, Cl. 126-409.000.
Gilman, Paul B., Jr.; and Haase, Jan R., to Eastman Kodak Company. Amplification process. 4,243,738, Cl. 430-202.000.
Ginter, Albert: *See*—
Ganter, Wolfgang; Ginter, Albert; King, Josef; and Riis, Peter, 4,244,038, Cl. 368-35.000.
Giulie, Joe D., to General Binding Corporation. Method of making prefabricated laminating packet with tab. 4,243,458, Cl. 156-247.000.
Gladrow, Elroy M.; Schuette, William L.; and Reid, Terry A., to Exxon Research & Engineering Co. Sulfur transfer cracking catalyst. 4,243,557, Cl. 252-455.00Z.
Glass, Alexander J., to United States of America, Energy. Fully relayed regenerative amplifier. 4,243,942, Cl. 330-4.300.
Glass, Howard L.; Liaw, Jiin-Herny W.; and Kobayashi, Tsutumo, to United States of America, Air Force. Self biased ferrite resonators. 4,243,697, Cl. 427-47.000.
Glennon, Alfred E., to International Coatings, Co., Inc. Pressure sensitive adhesives. 4,243,500, Cl. 204-159.120.
Glennon, Timothy P., to General Motors Corporation. Radio frequency amplifier with gain control. 4,243,947, Cl. 330-284.000.
Gliemeroth, Georg; Meckel, Lothar; and Heinemann, Peter, to Jenaer Glaswerk Schott & Gen. Optical fibers for communication transmission having high stability to nuclear radiation. 4,243,299, Cl. 350-96.340.
Globe-Union Inc.: *See*—
Rees, Herbert; and Nevrela, James D., 4,243,362, Cl. 425-130.000.
Gloucester Engineering Co., Inc.: *See*—
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Gnuechtel, Herman C., to Web Printing Controls Co., Inc. Register control system for web operating apparatus. 4,243,925, Cl. 318-603.000.
Go, Thiam L., to Zube, Friedrich Wilhelm. Displaying measuring instrument. 4,242,980, Cl. 116-202.000.
Godet, Jean: *See*—
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Goldberg, Ernest: *See*—
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Goldshtein, Boris G.: *See*—
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Goodale, Robert L.; Dressel, Thomas D.; and Borner, John W. Method and apparatus for exfoliative cytology. 4,243,049, Cl. 128-757.000.
Goodman, James R.: *See*—
Carlock, Gaylord W.; McKeown, William L.; Goodman, James R.; and Skrodzki, Chester, 4,243,358, Cl. 416-114.000.
Goodsmith, Dale H.: *See*—
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Goodson, Theodore, Jr.: *See*—
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Goodyear Aerospace Corporation: *See*—
Hogan, James J.; Lambert, Charles O.; and Wallace, Gene A., 4,244,029, Cl. 364-728.000.
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Goodyear Tire & Rubber Company, The: *See*—
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Lal, Joginder; and Walters, Sandra J., 4,243,561, Cl. 260-4.00R.
Goon, Harry; and Spector, George. Food warmer. 4,243,013, Cl. 126-43.000.
Gordon, Kevin S., to Northern Telecom Limited. Methods for testing optical fibres. 4,243,320, Cl. 356-73.100.
Gordon, Mack, to Aerodyne Development Corporation. Metallized amorphous silica fabric for high temperature use. 4,243,715, Cl. 428-263.000.
Gornott, Dietmar: *See*—
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Goshima, Takeshi; Sato, Hideaki; and Tsuji, Takao, to Canon Kabushiki Kaisha. Signal recording device. 4,243,849, Cl. 369-62.000.
Goss, H. Calvin. Document holder assembly. 4,243,249, Cl. 281-1.000.
Gossink, Robert G.: *See*—
Khoe, Giok D.; Gossink, Robert G.; and Jochem, Cornelis M. G., 4,243,399, Cl. 65-4.00B.
Goth, Goerge R.: *See*—
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Goudie, Alexander C.; and Gaster, Laramie M., to Beecham Group Limited. Fluoronaphthylones. 4,243,682, Cl. 424-331.000.
Goudsche Machinefabriek B.V.: *See*—
van der Schoot, Peter W. C., 4,242,952, Cl. 99-625.000.
Gould, Steven J.: *See*—
Schneider, Richard S.; and Gould, Steven J., 4,243,654, Cl. 424-12.000.
Gozzi, Ilia. Apparatus for joining pieces of laminar material and in particular plywood core strips. 4,243,465, Cl. 156-362.000.
Graalmann, Gerhard; and Siebert, Heinz, to Hauni-Werke Korber & Co. KG. Method and apparatus for forming an equalized tobacco stream. 4,243,054, Cl. 131-22.00R.
Grabel, Irwin J.; and Hanchar, Peter J., to Bally Manufacturing Corporation. Seesaw targets apparatus for pinball game. 4,243,222, Cl. 273-127.00R.
Grabowsky, Richard L.: *See*—
Riley, Robert L.; and Grabowsky, Richard L., 4,243,701, Cl. 427-244.000.
Gradi, Enzo, to Brematex S.p.A. Pneumatic take-down device for a circular knitting machine. 4,242,891, Cl. 66-149.00S.
Graf, Calvin R.: *See*—
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Graham Magnetics Incorporated: *See*—
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Graham, Weldon C., to General Atomic Company. Orbital arc-welding apparatus of split construction. 4,243,868, Cl. 219-125.110.
Grandchamp, Pierre-Andre: *See*—
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Granet, Alfred. Carrier conveyor. 4,242,965, Cl. 104-96.000.
Granger, Evertt H.: *See*—
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Gratzmuller, Claude A. Hydraulic system for simultaneous control, especially for the control of electric circuit breakers. 4,243,855, Cl. 200-81.400.
Gratzmuller, Jean L. Piston-type hydropneumatic accumulator equipped with a gas shortage detection device. 4,243,856, Cl. 200-81.500.
Gray, Douglas W., to Saltney Engineering Company Limited. Linen towel cabinets. 4,243,278, Cl. 312-38.000.
Green, David T., to United States Surgical Corporation. Surgical clip applicator. 4,242,902, Cl. 72-410.000.
Green, Melvin E.: *See*—
Bubley, Henry J.; Green, Melvin E.; and Iaccino, Alex, 4,242,956, Cl. 101-123.000.
Green, Norman W., to Occidental Petroleum Corp. Pyrolysis reactor and fluidized bed combustion chamber. 4,243,489, Cl. 201-12.000.
Greenberg, Edward S., to FMC Corporation. Method for reducing the formation of trihalomethanes in drinking water. 4,243,525, Cl. 210-754.000.
Greenberg, Roland: *See*—
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Greene, Jerome. Hydrodynamic bearing with radial, thrust and moment load capacity. 4,243,274, Cl. 308-9.000.
Greengrass, Colin W.: *See*—
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Greenstate, Inc.: *See*—
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Greif, Donald S.: *See*—
Hernandez, Henry R.; Greif, Donald S.; Barna, Albert N.; and Thornton, Douglas S., 4,243,480, Cl. 162-141.000.
Griffin, Lawrence C., to Zegeer, Jim, a part interest. Biopsy device. 4,243,048, Cl. 128-751.000.
Grime, Thomas E.; and Robinson, Frank A., Jr., to Champion Spark Plug Company. Vaporizer with electrode housing interlock. 4,243,870, Cl. 219-295.000.
Grimm, Robert A.: *See*—
Throckmorton, Peter E.; Sitz, Gary E.; and Grimm, Robert A., 4,243,612, Cl. 568-431.000.
Grisebach, Hans-Th.: *See*—
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Groff, Henry C., to Oil Extractors, Inc. Standing valve assembly for an oil well pump. 4,243,361, Cl. 417-554.000.
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Grossa, Mario: *See*—
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Grossman, Leonard N.; Portis, Alan M.; Bernatowicz, Henry; and Schoenig, Frederick C., Jr., to General Electric Company. Determin-

ing paramagnetic additive content of a base paramagnetic material containing ferromagnetic impurity. 4,243,939, Cl. 324-201.000.

Grossmann, Holger, to Audi NSU Auto Union Aktiengesellschaft. Motor vehicle heater and ventilator. 4,242,950, Cl. 98-2.000.

Grourke, Martin J.; and Flynn, Roy W., to Rohm and Haas Company. Corrosion-inhibiting method using latex paints and article. 4,243,416, Cl. 106-14.130.

Grourke, Martin J.; and Flynn, Roy W., to Rohm and Haas Company. Corrosion-inhibiting latex paints. 4,243,417, Cl. 106-14.130.

Grover, Melvin G.: *See*—
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Grow Group, Inc.: *See*—
Williams, Charles E., 4,243,706, Cl. 427-386.000.

Gruber, Kurt; Keim, Willi; and Hentschel, Klaus, to Mannesmannrohren-Werke A.G. Process for transportation and distillation of petroleum with methanol. 4,243,493, Cl. 203-66.000.

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Rees, Herbert; Brown, Paul; and Grund, Miroslav, 4,243,364, Cl. 425-153.000.

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Grütter, James H.: *See*—
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GTE Automatic Electric Laboratories Incorporated: *See*—
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Jameel, Khaja M.; and Koppensteiner, James V., 4,243,963, Cl. 335-151.000.
Mui, Wing F., 4,244,018, Cl. 364-200.000.
Young, John S., 4,243,841, Cl. 179-6.30R.

GTE Laboratories Incorporated: *See*—
Brecher, Charles; and Oblas, Daniel W., 4,243,909, Cl. 313-487.000.
Proud, Joseph M., Jr., 4,243,950, Cl. 331-78.000.

GTE Products Corporation: *See*—
Brenner, Kurt H., Jr., 4,243,908, Cl. 313-407.000.
Kohl, Clyde B.; Kendrick, George B.; and Fleming, Raymond T., 4,243,907, Cl. 313-318.000.

Guenthner, Franz, to Jenaer Glaswerk Schott & Gen. Apparatus for producing double-walled heat insulating containers. 4,243,401, Cl. 65-153.000.

Guilbert, C. Carol; and Scepanski, William H., to Economics Laboratory, Inc. Stabilized liquid enzyme-containing detergent compositions. 4,243,543, Cl. 252-105.000.

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Cartwright, William F.; Cornell, Alan; Higgins, D. Bernard; and Mikkelson, Robert P., 4,243,053, Cl. 131-4.00A.

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Gunne, Ingemar; and Almgren, Bertil, to Siemens Aktiengesellschaft. Bottle seal. 4,243,150, Cl. 215-247.000.

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Haas, James L., to Mobay Chemical Corporation. Toluene diamine initiated polyether polyols. 4,243,759, Cl. 521-167.000.

Haase, Jan R.: *See*—
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Haase, Jaroslav: *See*—
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Haase, Rainer: *See*—
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Haines, Ralph W., to National Semiconductor Corporation. Digital microprocessor having a time-shared adder. 4,244,028, Cl. 364-712.000.

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Hall, Wilbur S.; and Leister, Harry M., to Amchem Products, Inc. Autodeposition coating process. 4,243,704, Cl. 427-327.000.

Hallam, Joyce: *See*—
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Haluska, Loren A., to Dow Corning Corporation. Non-coloring, abrasion resistant, adherent coating for gold and silver surfaces. 4,243,722, Cl. 428-450.000.

Hamada, Masanori; and Kawaguchi, Sueji, to Clarion Co., Ltd. Noise reduction circuit. 4,244,056, Cl. 455-213.000.

Hambling, David J.: *See*—
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Hammel, Ronald O.; Barcus, William J.; and Cone, Irwin C., to Gates Rubber Company, The. Rechargeable flashlight. 4,244,011, Cl. 362-183.000.

Hammon, Fritz; Ohlinger, Manfred; and Hartmann, Job-Werner, to BASF Aktiengesellschaft. Method and device for determining the homogeneity of magnetic dispersions. 4,243,059, Cl. 137-2.000.

Hammond, Robert B.: *See*—
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Handrick, Kurt; and Kolling, Georg, to Bergwerksverband GmbH. Process for making indole. 4,243,590, Cl. 260-319.100.

Hanes, Ronald: *See*—
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Hanik, Michael. Patient chair slipper. 4,243,265, Cl. 297-423.000.

Hankyu Zouki Kogyo Kabushiki Kaisha: *See*—
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Hanneken, Henry P.; and Marriott, William H., Jr., to PPG Industries, Inc. Ceramic conveyor rolls with metal end caps frictionally fixed thereto. 4,242,782, Cl. 29-129.000.

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Hans Schwarzkopf GmbH: *See*—
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Hardee, Patrick C.; and Jacobs, Malin L. Open circuit alarm. 4,243,970, Cl. 340-52.00D.

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Hargreaves, Keith; Hartley, David; and Wainwright, Paul, to Rocol Limited. Anaerobic adhesives. 4,243,791, Cl. 526-320.000.

Harms, Hauke: *See*—
Papp, Alfred; and Harms, Hauke, 4,243,936, Cl. 324-96.000.

Harnick, Donn B. Skin incising device for scar removal. 4,243,038, Cl. 128-305.000.

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Harris, Len A.: *See—*
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Harrison, Emmett S.; and Leto, Anthony, to Curtiss-Wright Corporation. Turbojet afterburner engine with two-position exhaust nozzle. 4,242,865, Cl. 60-242.000.
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Hartmann, Job-Werner: *See—*
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Hartmann, Kurt, to International Business Machines Corporation. Electrode guide. 4,243,332, Cl. 400-119.000.
Harvey Hubbell, Incorporated: *See—*
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Hascoe, Norman, to Semi-Alloys, Inc. Metallic hermetic sealing cover for a container. 4,243,729, Cl. 428-577.000.
Hass, Robert H.; and Hansford, Rowland C., to Union Oil Company of California. Process for removal of hydrogen sulfide from gas streams. 4,243,647, Cl. 423-573.00G.
Hatanaka, Masayoshi: *See—*
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Hauni-Werke Korber & Co. KG.: *See—*
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Hearn, Robert H.: *See—*
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Hedaya, Eddie: *See—*
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Heeb, Dieter; Bergemann, Uwe; and Frenzel, Claus-Dieter, to Hans Schwarzkopf GmbH. Pressurized aerosol formulation and process for the manufacture thereof. 4,243,548, Cl. 252-305.000.
Heidelberger Druckmaschinen AG: *See—*
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Heikkinen, Verner E.; and Heikkinen, Edward A. Apparatus for removing weeds. 4,243,206, Cl. 254-132.000.
Heim, Peter; Borer, Karl; and Allemann, Werner, to Schweizerische Isola-Werke. Thermosetting heat bondable lacquer. 4,243,778, Cl. 525-454.000.
Heim Universal Corporation, The: *See—*
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Heimala, Seppo O., to Outokumpu Oy. Process for electrolytic recovery of zinc from zinc sulfate solutions. 4,243,499, Cl. 204-119.000.
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Heitmann, Bob, to Hauni-Werke Korber & Co. KG. Apparatus for inserting packs into the gaps of a moving file of cigarette packs or the like. 4,243,135, Cl. 198-370.000.
Helgesen, Paul E., to Susquehanna Broadcasting Co. Compatible ceramic electric heater for food handling vessels. 4,243,873, Cl. 219-386.000.
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Hemsworth, Alan D., to International Standard Electric Corporation. Receiver word alignment for digital transmission systems using a redundant ternary line code. 4,244,052, Cl. 375-19.000.
Hench, Hans H. W., to Automatik Apparate-Machinenbau H. Hench GmbH. Granulation of materials. 4,243,181, Cl. 241-142.000.
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Henrick, Clive A.; and Garcia, Barbara A., to Zoecon Corporation. Substituted amino acids. 4,243,819, Cl. 562-433.000.
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Herborn, Peter E., to Quantor Corporation. High speed, low temperature diazo processor. 4,243,310, Cl. 354-299.000.
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Walsh, Robert M., 4,243,702, Cl. 427-256.000.
Hergenrother, William L.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Polyphosphazene copolymers containing N-substituted pyrrole substituents. 4,243,795, Cl. 528-168.000.
Hergenrother, William L.; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Polyphosphazene polymers containing substituents derived from aldehydes or ketones., 4,243,796, Cl. 528-224.000.
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Hernandez, Henry R.; Greif, Donald S.; Barna, Albert N.; and Thornton, Douglas S., to National Starch and Chemical Corporation. Process for the production of paper containing starch fibers and the paper produced thereby. 4,243,480, Cl. 162-141.000.
Herold, Georg, to Siemens Aktiengesellschaft. Method for the manufacture of plastic insulators with screens for indoor and outdoor use. 4,243,628, Cl. 264-275.000.
Herrmann, Heinz, to Hoechst Aktiengesellschaft. Liquid developer and copolymer polarity control agent for use therewith. 4,243,736, Cl. 430-115.000.
Hersener, Jurgen; and Wilhelm, Alfred, to Licentia Patent-Verwaltungs-G.m.b.H. Radiation-sensitive positively acting materials. 4,243,742, Cl. 430-270.000.
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Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., to Pfizer Inc. 15-Substituted-omega-pentanor-prostaglandins. 4,243,595, Cl. 260-345.70P.
Hesse, William K.: *See—*
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Hewlett-Packard Company: *See—*
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Higgins, D. Bernard: *See—*
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Higuchi, Noboru; and Futamura, Shoji, to NGK Insulators, Ltd.; and Institute of Technology Precision Electrical Discharge Works. Die for extruding a honeycomb structural body. 4,243,370, Cl. 425-462.000.
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Hill, Donald C.; and Lyall, Robert W., to R. W. Lyall & Co., Inc. Slip fit type tubing coupling. 4,243,254, Cl. 285-242.000.
Hill, Robert O.; and Raistrick, Bernard. Process of extraction of aluminum values from coal ash. 4,243,640, Cl. 423-132.000.
Hill, Rodman K. Mold for molding propellers having tapered hubs. 4,243,199, Cl. 249-142.000.

Hillenkamp, Franz; Kaufmann, Raimund; Unsold, Eberhard; Nietsche, Rainer; Wechsung, Reiner; Vogt, Henning; Bank, Walter; and Aberle, Lothar, to Leybold-Heraeus GmbH. Process and apparatus for analyzing a sample with the aid of pulsed laser irradiation. 4,243,887, Cl. 250-423.00P.

Hino, Toshiyuki, to Kajima Kensetsu Kabushiki Kaisha. Heat pump type heating and cooling source system. 4,242,873, Cl. 62-2.000.

Hiraide, Takashi: *See*—
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Hisatomi, Takashi, to Nissan Motor Company, Limited. Ignition system in dual spark plug ignition engine with EGR system. 4,243,005, Cl. 123-638.000.

Hitachi Chemical Company, Ltd.: *See*—
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Ikeda, Kiyoji; and Hayashida, Tetsuya, 4,243,506, Cl. 204-298.000.
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Hobbs, Stanley Y.: *See*—
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Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europaisches Unternehmen: *See*—
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Hockham, George A.: *See*—
Nemit, Jeffrey T.; Hockham, George A.; and Wolfson, Ronald I., 4,243,990, Cl. 343-771.000.

Hocq, Robert, to Societe Anonyme dite: INTERLIGHT. Fountain pen with ink refill carrier. 4,243,337, Cl. 401-132.000.

Hodges, Donald R.: *See*—
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Hoechst Aktiengesellschaft: *See*—
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Hoffman, Robert K.; and Kavanaugh, Mark A., to Parker-Hannifin Corporation. Three position selector valve. 4,243,072, Cl. 137-637.100.

Hoffmann, Heinz: *See*—
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Hoffmann, Herwig: *See*—
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Hoffmann-La Roche Inc.: *See*—
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Hofmeister, Helmut: *See*—
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Hogan, James J.; Lambert, Charles O.; and Wallace, Gene A., to Goodyear Aerospace Corporation. Digital video correlator. 4,244,029, Cl. 364-728.000.

Hoheisel, Klaus; and Janocha, Seigfried, to Hoechst Aktiengesellschaft. Shrinkable polyethylene terephthalate film. 4,243,712, Cl. 428-35.000.

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Hohman, Charles M., to Owens-Corning Fiberglas Corporation. Glass manufacturing. 4,243,423, Cl. 106-54.000.

Holmes, Alan, to Romag Holdings Ltd. Laminates. 4,243,719, Cl. 428-411.000.

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Holz, John F.: *See*—
Pratt, Dexter, Jr.; and Holz, John F., 4,243,120, Cl. 182-98.000.

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Shioya, Toshio; Nishimura, Hiroyuki; and Umemoto, Takashi, 4,242,998, Cl. 123-568.000.

Honeywell Inc.: *See*—
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Hong, Su-don: *See*—
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Honmo, Hiroshi: *See*—
Nomura, Hidenori; Honmo, Hiroshi; and Matsushita, Shigeo, 4,243,398, Cl. 65-2.000.

Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, to Taiho Pharmaceutical Company. Processes for the preparation of glyoxal-2-oxims. 4,243,812, Cl. 548-248.000.

Horak, Anthony: *See*—
Wallace, Harry L.; Horak, Anthony; Krebs, Fred G.; and Brown, Louis R., 4,243,330, Cl. 400-194.000.

Hori, Yutaka; Takahashi, Hidekazu; Sunakawa, Makoto; Ijichi, Ichiro; and Kamei, Kiyohiro, to Nitto Electric Industrial Co., Ltd. Heat-curable composite sheet and process for forming the same. 4,243,462, Cl. 156-310.000.

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Hornak, Alexander, to Rexnord Inc. Low silhouette adjustable latch with secondary lock. 4,243,255, Cl. 292-113.000.

Horner, Sven H. N.: *See*—
Tisell, Claes-Gustav E. Y.; Lundell, Karl E. B.; Horner, Sven H. N.; Thorstensson, Gustav Y.; and Karlstedt, Gustav S. E., 4,242,945, Cl. 92-26.000.

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Horowitz, Samuel I.; and Ingram, Henry T., to Witco Chemical Corporation. Method of increasing yield of petroleum pitch. 4,243,513, Cl. 208-44.000.

Hoser, Alfred. Self-regulating heater. 4,242,999, Cl. 123-548.000.

Houtkamp, Johannes J.: *See*—
van Geest, Lambertus K.; and Houtkamp, Johannes J., 4,243,905, Cl. 313-102.000.

Howell, William L. Parenteral fluid administration sets. 4,243,032, Cl. 128-214.00C.

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Fischer, Joseph; and Hoyt, John M., 4,243,576, Cl. 260-42.150.

Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, to Kureha Kagaku Kogyo Kabushiki Kaisha; and Chiyooa Chemical Engineering and Construction Co., Ltd. Reactor for the thermal cracking of heavy oil. 4,243,633, Cl. 422-129.000.

Hruza, Anne: *See*—
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Huber, Wilhelm: *See*—
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Huchler, Otto H.: *See*—
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Hudson, John L.: *See*—
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Huehls, Patrick N.: *See*—
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Hughes, Sarah Y.: *See*—
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Hughes Tool Company: *See*—
Wisler, Allen E.; and Lane, Leo D., 4,243,727, Cl. 428-558.000.

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Humphrey Products Company: *See*—
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Humphreys, Michael. Electrical distribution system. 4,243,284, Cl. 339-21.00R.

Hung, William M.: *See*—
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Hunsucker, Jerry H., to International Minerals & Chemical Corp. Strippable coating resin from nitroalkanol and polyamine. 4,243,800, Cl. 528-422.000.

Hunt, Harold R., to Phillips Petroleum Company. Carbon black pellet and method and apparatus for producing same. 4,243,365, Cl. 425-222.000.

Hunt, Lloyd P., to Johnson Heater Corp. Combustion chamber construction. 4,243,014, Cl. 126-119.000.

Hunt, Robert E.: *See*—
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Hunter Engineering Co., Inc.: *See*—
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Hurd, Roger B.; and Barbosa, Roosevelt N. Motorcycle garage. 4,242,846, Cl. 52-71.000.
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Huszar, Laszlo: *See*—
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ICI Americas Inc.: *See*—
Kuehn, Erich, 4,243,788, Cl. 526-261.000.
IDN Inventions and Development of Novelties AG: *See*—
Ackeret, Peter, 4,243,279, Cl. 312-107.000.
Ignell, Rolf L., to Tetra Pak Developpement SA. Tear-up closing device for containers. 4,243,152, Cl. 220-270.000.
Ihara, Hirokazu: *See*—
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Ikeda, Kiyoji; and Hayashida, Tetsuya, to Hitachi, Ltd. Plasma-etching apparatus. 4,243,506, Cl. 204-298.000.
Ikeda, Susumu: *See*—
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ILC Dover, a division of ILC Industries, Inc.: *See*—
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Imamura, Tetsuya; and Hiraide, Takashi, to Kao Soap Co., Ltd. Liquid detergent compositions containing alkanolamines and polyoxyalkylene alkyl ethers. 4,243,559, Cl. 252-548.000.
Imparato, Luigi: *See*—
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Imperial Chemical Industries Limited: *See*—
Balasubramanyan, Sugavanam; and Shephard, Margaret C., 4,243,405, Cl. 71-76.000.
Beale, Michael H.; and MacMillan, Jake, 4,243,594, Cl. 260-343.30G.
Bye, Ashley D.; and Newton, Alan B., 4,243,782, Cl. 526-140.000.
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Inagami, Masaaki; and Fukushima, Hiroshi, to Nippon Zeon Co. Ltd. Rubber composition. 4,243,774, Cl. 525-405.000.
Inamura, Toshio. Water induction system for internal combustion engines. 4,243,202, Cl. 251-61.400.
Infurnco (Proprietary) Limited: *See*—
Parsons, Charles H.; and Casper, Badenhorst H., 4,243,832, Cl. 13-16.000.
Ingalz, Thomas J., to International Diagnostic Technology. Method and apparatus for photoluminescent detection and measurement. 4,243,322, Cl. 356-244.000.
Ingersoll-Rand Company: *See*—
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Higuchi, Noboru; and Futamura, Shoji, 4,243,370, Cl. 425-462.000.
International Business Machines Corporation: *See*—
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Bethune, Donald S.; Lankard, John R.; Loy, Michael M.; and Sorokin, Peter P., 4,243,881, Cl. 250-338.000.
Ciszek, Theodore F.; and Schwuttke, Guenter H., 4,243,471, Cl. 156-616.00R.
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Tsui, Frank F., 4,244,048, Cl. 371-15.000.
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International Minerals & Chemical Corp.: *See*—
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International Safety Industries Ltd.: *See*—
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International Standard Electric Corporation: *See*—
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International Telephone and Telegraph Corporation: *See*—
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Kao, Charles K.; and Maklad, Mokhtar S., 4,243,298, Cl. 350-96.330.
Nemit, Jeffrey T.; Hockham, George A.; and Wolfson, Ronald I., 4,243,990, Cl. 343-771.000.
Interproduct B.V.: *See*—
Rettberg, Leonard W., 4,243,157, Cl. 222-44.000.
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Ipri, Alfred C., to RCA Corporation. Fabrication of an integrated injection logic device with narrow basewidth. 4,244,001, Cl. 357-44.000.
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Lukens, Herbert R., Jr.; Snowden, Donald P.; and Voigt, Richard L., 4,243,644, Cl. 423-352.000.
Ishida, Atsuo: *See*—
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Ishii, Mitsuru: *See*—
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Ishii, Shinichiro: *See*—
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Ishikawa, Shingo: *See*—
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Isogai, Nobuo; Okawa, Takashi; and Takeda, Takako, to Mitsubishi Gas Chemical Company, Inc. Process for simultaneously producing p-toluic acid and alkylene oxide. 4,243,599, Cl. 260-348.250.
Israilides, Cleanthes; Han, Youn W.; and Anderson, Arthur W., to United States of America, Agriculture. Process for improving the palatability of straw for animal feed. 4,243,686, Cl. 426-53.000.

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Ito, Tadashi: *See—*
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ITT Industries, Inc.: *See—*
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Pfalzer, Lothar; and Fischer, Siegbert, 4,243,478, Cl. 162-4.000.
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Jackovitz, John F.; Panson, Armand J.; and Pantier, Earl A., to Westinghouse Electric Corp. Iron EDTA chelate catalyzed oxidation of uranium. 4,243,638, Cl. 423-17.000.

Jackson, Samuel G. Variable back pressure valve. 4,243,070, Cl. 137-510.000.

Jackson, William E.: *See—*
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Jacobs, Malin L.: *See—*
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Jacobson, Allan J.; Chianelli, Russell R.; and Whittingham, M. Stanley, to Exxon Research & Engineering Co. Method of making cathodes derived from ammonium-metal-chalcogen compounds. 4,243,624, Cl. 264-82.000.

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Jaffe, Wolfgang, to Singer Company, The. Linear motor with ring magnet and non-magnetizable end caps. 4,243,899, Cl. 310-14.000.

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Jagger, Brian E.: *See—*
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Janezich, Frank A.: *See—*
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Janocha, Siegfried: *See—*
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Janome Sewing Machine Co. Ltd.: *See—*
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Japan Atomic Energy Research Institute: *See—*
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Jardy, Alain P.: *See—*
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Jarre, Wolfgang: *See—*
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Jastrzebski, J. T. B. H.: *See—*
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Jeanson, Rene H., to Societe Anonyme Francaise du Ferodo. Dredger having a two-part boom. 4,242,816, Cl. 37-67.000.

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Jeffries, Ernest H., Jr., to Resco Products, Inc. End block. 4,243,385, Cl. 432-241.000.

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Jenaer Glaswerk Schott & Gen.: *See—*
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Jenner, Rolf-Dieter; Schafer, Dieter; and Bauer, Wolfgang O., to Robert Bosch GmbH. Drawing pattern for the human form. 4,242,802, Cl. 33-174.00B.

Jennings, Richard E.: *See—*
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Jeschke, Willi, to Heidelberger Druckmaschinen AG. Ink duct for offset or relief printing machines. 4,242,958, Cl. 101-365.000.

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Jilek, Jiri: *See—*
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Jochem, Cornelis M. G.: *See—*
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Johann Wolf Gesellschaft m.b.H. KG: *See—*
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John Wyeth & Brother Limited: *See—*
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John Zink Company: *See—*
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Johns-Manville Corporation: *See—*
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Johnson, Bruce K.; and Whiteside, George D., to Polaroid Corporation. Walking beam latch and lens disc actuator arrangement. 4,243,309, Cl. 354-197.000.

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Wittemann, Robert F., 4,243,051, Cl. 128-798.000.

Johnson, Kenneth A.: *See—*
Stang, John H.; and Johnson, Kenneth A., 4,242,948, Cl. 92-212.000.

Johnson, Marvin L. Sled. 4,243,238, Cl. 280-20.000.

Johnson, Michael R.: *See—*
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,243,595, Cl. 260-345.70P.

Johnson, Philip P.: *See—*
Dingler, Geoffrey L.; and Johnson, Philip P., 4,243,431, Cl. 134-104.000.

Johnson, Robert E., to McDonnell Douglas Corporation. Ball pivot thrust bearing flex joint. 4,243,192, Cl. 244-215.000.

Johnston, William G.: *See—*
Knepp, James E.; Johnston, William G.; and Jursich, Myron J., 4,243,537, Cl. 252-49.300.

Jones, Donald E., to Life Chiropractic College, Inc. Cervical adjusting unit. 4,243,025, Cl. 128-70.000.

Jones, Michael D., to Champion International Corporation. Food container and process for manufacturing the same. 4,243,170, Cl. 229-2.54R.

Jones, Raymond B.: *See—*
Magrini, Kenneth H.; and Jones, Raymond B., 4,243,710, Cl. 428-208.000.

Jones, Robert D., to Intraco, Inc. Clamp. 4,243,193, Cl. 248-62.000.

Jordan, John F.; and Lampkin, Curtis M., to Photon Power, Inc. Solar cell array. 4,243,432, Cl. 136-244.000.

Jordan, Thomas C., III: *See—*
Suttles, James M.; Norton, Terry L.; Hart, Joseph P.; and Jordan, Thomas C., III, 4,242,970, Cl. 108-159.000.

Jorgensen, Ernst K.: *See—*
Ter-Borch, Poul E.; Baumgarten, Per; and Jorgensen, Ernst K., 4,243,522, Cl. 210-774.000.

Jumonji, Shigeru: *See—*
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.

Jurgensen, Heinrich, to Dr.-Ing. Rudolf Hell GmbH. Method and apparatus for avoiding or minimizing unwanted line-structures in the electronic reproduction of images. 4,244,005, Cl. 358-201.000.

Jursich, Myron J.: *See—*
Knepp, James E.; Johnston, William G.; and Jursich, Myron J., 4,243,537, Cl. 252-49.300.

Jyomura, Shigeru: *See*—
Takeuchi, Hiroshi; Ito, Yukio; Jyomura, Shigeru; Yamashita, Kunio; Nagatsuma, Kazuyuki; Ashida, Sakichi; and Ishii, Mitsuru, 4,243,541, Cl. 252-62.900.

K-Jack Engineering Company, Inc.: *See*—
Chalabian, Jack S., 4,243,134, Cl. 194-59.000.

Kabay, Steve; and Nemecek, Ralph E., to General Motors Corporation. Pivot construction. 4,243,341, Cl. 403-16.000.

Kabushiki-Kaisha Dentronics: *See*—
Arai, Toshio, 4,243,388, Cl. 433-27.000.

Kabushiki Kaisha Seikosha: *See*—
Samejima, Toshihide; Moritani, Nakanobu; Oda, Hajime; and Fujita, Masanori, 4,244,042, Cl. 368-73.000.

Kabushiki Kaisha Tokai-Rika-Denki Seisakusho: *See*—
Motonami, Masanao; Yasumatsu, Jun; and Tsujiuchi, Yoshio, 4,243,185, Cl. 242-107.200.

Kajima Kensetsu Kabushiki Kaisha: *See*—
Hino, Toshiyuki, 4,242,873, Cl. 62-2.000.

Kakinuma, Toshihide: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kakinuma, Toshihide; and Kume, Toshiaki, 4,242,973, Cl. 112-158.00E.

Kakizoe, Yutaka: *See*—
Onoda, Fumio; and Kakizoe, Yutaka, 4,243,924, Cl. 318-573.000.

Kakumoto, Michio; Oe, Eizi; and Nakagawa, Hirosi, to Otsuka Pharmaceutical Factory Inc. Method and system for checking sealed containers for pinholes by comparing two discharge currents. 4,243,932, Cl. 324-54.000.

Kaldor, Andrew: *See*—
Hall, Richard B.; Kaldor, Andrew; Kramer, George M.; and Dines, Martin B., 4,243,597, Cl. 260-347.800.

Kali-Chemie Aktiengesellschaft: *See*—
Milkowski, Wolfgang; Budden, Renke; Funke, Siegfried; Huschens, Rolf; Liepmann, Hans-Gunther; Stuhmer, Werner; and Zeugner, Horst, 4,243,585, Cl. 260-239.0BD.

Kalibjian, Ralph. Ultra-fast framing camera tube. 4,243,878, Cl. 250-213.0VT.

Kamei, Kiyohiro: *See*—
Hori, Yutaka; Takahashi, Hidekazu; Sunakawa, Makoto; Ijichi, Ichiro; and Kamei, Kiyohiro, 4,243,462, Cl. 156-310.000.

Kameyama, Atsumi, to Sharp Kabushiki Kaisha. Car shaver and holder therefor. 4,242,799, Cl. 30-43.100.

Kanebo Foods Ltd.: *See*—
Kokeguchi, Sadao; Takahashi, Hiroshi; Okada, Ken; and Murakami, Sanpei, 4,243,689, Cl. 426-557.000.
Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,243,690, Cl. 426-557.000.

Kaneyasu, Tetsuo: *See*—
Akima, Tosio; Kudou, Etsuzaburo; Kaneyasu, Tetsuo; and Kochi, Hiromi, 4,243,784, Cl. 526-88.000.

Kang, Eyung W.; Brandao, Ruy L.; Bares, Jaromir R.; and Payne, Delmar V., to Bendix Corporation, The. Means for improving angular resolution of incoherent pulse radar systems. 4,243,988, Cl. 343-5.0VQ.

Kangol Magnet Limited: *See*—
Anderson, Alexander B., 4,243,266, Cl. 297-483.000.

Kao, Charles K.; and Maklad, Mokhtar S., to International Telephone and Telegraph Corporation. High-strength optical preforms and fibers with thin, high-compression outer layers. 4,243,298, Cl. 350-96.330.

Kao Soap Co., Ltd.: *See*—
Imamura, Tetsuya; and Hiraide, Takashi, 4,243,559, Cl. 252-548.000.
Okumura, Takeo; Ishida, Atsuo; and Hayashi, Shizuo, 4,243,657, Cl. 424-47.000.

Kaposvari Mezogazdasagi Gepgyarto es Szolgaltato Vallalat in Kaposvar: *See*—
Sipos, Sandor; Varga, Sandor; and Hali, Imre, 4,243,104, Cl. 172-148.000.

Kapp, Joachim F.: *See*—
Annen, Klaus; Laurent, Henry; Hofmeister, Helmut; Wiechert, Rudolf; Wendt, Hans; and Kapp, Joachim F., 4,243,664, Cl. 424-243.000.

Karch, John A.: *See*—
Burk, Emmett H.; Yoo, Jin S.; Karch, John A.; and Sun, Jui-Yuan, 4,243,550, Cl. 252-412.000.

Karelin, Jochen: *See*—
Neumann, Gerhard M.; and Karelin, Jochen, 4,243,486, Cl. 176-37.000.

Karlstedt, Gustav S. E.: *See*—
Tisell, Claes-Gustav E. Y.; Lundell, Karl E. B.; Horner, Sven H. N.; Thorstensson, Gustav Y.; and Karlstedt, Gustav S. E., 4,242,945, Cl. 92-26.000.

Karmazin Products Corporation: *See*—
Woodhull, Ivan D., Jr.; and Liedel, Thomas H., 4,243,094, Cl. 165-114.000.

Kashiki, Masayuki: *See*—
Minagawa, Motonobu; Akutsu, Mitsuo; Fujiwara, Hiroshi; and Kashiki, Masayuki, 4,243,581, Cl. 260-45.85S.

Kataoka, Shunpei, to Nissan Motor Company, Limited. Suspension height adjusting mechanism in torsion-bar suspension system. 4,243,247, Cl. 280-700.000.

Kates, James M., to Teledyne Industries, Inc. Loudspeaker system. 4,243,840, Cl. 179-1.00D.

Kato, Kotaro: *See*—
Ueda, Jun; Mori, Haruo; Hagimura, Kazuo; and Kato, Kotaro, 4,244,000, Cl. 357-39.000.

Kaufman, Lawrence G.; and Merriam, Charles N., to Union Carbide Corporation. Ambient temperature curable hydroxyl containing polymer/silicon compositions. 4,243,767, Cl. 525-102.000.

Kaufman, Martin H., to United States of America, Navy. Nitrile rubber adhesion. 4,243,771, Cl. 525-340.000.

Kaufman, Michael J. Icing prevention system for a conveyor belt. 4,243,136, Cl. 198-493.000.

Kaufmann, Raimund: *See*—
Hillenkamp, Franz; Kaufmann, Raimund; Unsold, Eberhard; Nietsche, Rainer; Wechsung, Reiner; Vogt, Henning; Bank, Walter; and Aberle, Lothar, 4,243,887, Cl. 250-423.00P.

Kavanaugh, Mark A.: *See*—
Hoffman, Robert K.; and Kavanaugh, Mark A., 4,243,072, Cl. 137-637.100.

Kawaguchi, Kozo, to GAC International, Inc. Orthodontic appliance. 4,243,386, Cl. 433-9.000.

Kawaguchi, Sueji: *See*—
Hamada, Masanori; and Kawaguchi, Sueji, 4,244,056, Cl. 455-213.000.

Kawai, Hisasi: *See*—
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,243,008, Cl. 123-425.000.

Kawamura, Yoshihisa; and Saito, Masaaki, to Nissan Motor Company, Limited. Internal combustion engine with fuel injectors. 4,242,992, Cl. 123-491.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Suzuki, Takeshi; Murao, Mikio; Uchida, Masahiro; and Nezuka, Minoru, 4,243,382, Cl. 432-78.000.

Kawashima, Yutaka: *See*—
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,243,008, Cl. 123-425.000.

Kawasumi, Yoshio: *See*—
Sato, Haruki; and Kawasumi, Yoshio, 4,243,728, Cl. 428-570.000.

Kawneer Company, Inc.: *See*—
Hubbard, S. Eugene, 4,243,018, Cl. 126-425.000.

Kay, Alan F. Press fit intelligent fasteners for random or lightly constrained assembly. 4,242,778, Cl. 24-230.00R.

Kazanjy, Robert P.: *See*—
Warren, John B.; Robinson, Ernest Y.; and Kazanjy, Robert P., 4,242,964, Cl. 102-275.000.

Kazimirov, Eduard K.: *See*—
Sevastianov, Viktor V.; and Kazimirov, Eduard K., 4,243,043, Cl. 128-422.000.

Kazmierczak, Robert T.: *See*—
MacLeay, Ronald E.; and Kazmierczak, Robert T., 4,243,821, Cl. 568-561.000.

Kazmierowicz, Casimir W. Apparatus for monitoring and controlling a flat zone in a furnace. 4,242,907, Cl. 73-341.000.

Keck, Dieter, to C. Keller GmbH u. Co. KG. Apparatus for separating joined-bricks. 4,243,012, Cl. 125-23.00R.

Keeler, Lawrence M.: *See*—
Lundgren, William E., 4,242,859, Cl. 57-58.890.

Keely, William A., to Bendix Corporation, The. Idle speed control system for vehicle engines. 4,242,994, Cl. 123-339.000.

Keim, Willi: *See*—
Gruber, Kurt; Keim, Willi; and Hentschel, Klaus, 4,243,493, Cl. 203-66.000.

Kemp, Alonzo. Burglar proof fire safe window covering. 4,243,090, Cl. 160-145.000.

Kendall, Roy E. Card game. 4,243,226, Cl. 273-292.000.

Kendall, Thomas L., to Toro Company, The. Irrigation control system. 4,244,022, Cl. 364-420.000.

Kendrick, George B.: *See*—
Kohl, Clyde B.; Kendrick, George B.; and Fleming, Raymond T., 4,243,907, Cl. 313-318.000.

Kenney, Michael J., to Dunlop Limited. Plugs composed of two rubbers having different moduli of extension used for repairing pneumatic tires. 4,243,089, Cl. 152-370.000.

Kent, Francis J.: *See*—
Boshold, Raymond F.; and Kent, Francis J., 4,242,895, Cl. 72-257.000.

Kent, Raymond W., Jr, to Dow Chemical Company, The. Process for the preparation of styrene and acrylonitrile containing polymers. 4,243,781, Cl. 526-68.000.

Keogh, Michael J., to Union Carbide Corporation. Flame retardant alkylene-alkyl acrylate copolymer composition. 4,243,579, Cl. 260-45.70R.

Kerr, George T.; Plank, Charles J.; and Rosinski, Edward J., to Mobil Oil Corporation. Alkylation of aromatics using a high silica zeolite. 4,243,828, Cl. 585-467.000.

Kerr-McGee Corporation: *See*—
Riggs, Olen L., Jr.; and Brunsell, Dennis A., 4,243,494, Cl. 204-1.500.

Kerstan, Walter, to Wessel-Werk Gesellschaft mit beschrankter Haftung. Method of refining the silicatic slag phase obtained in the thermal recovery of phosphorus from phosphates. 4,243,425, Cl. 106-117.000.

Keskkula, Henno; and Miller, Frederick A., to Dow Chemical Company, The. Impact-resistant polymers and rubber concentrates therefor. 4,243,765, Cl. 525-86.000.

Kewley, Norman E.; and Smetana, Andrew, to General Electric Company. Flash lamp array construction. 4,243,371, Cl. 431-13.000.
Khoe, Giok D.; Gossink, Robert G.; and Jochem, Cornelis M. G., to U.S. Philips Corporation. Method of producing a coupling element for an optical transmission fiber. 4,243,399, Cl. 65-4.00B.
Kida, Junichi: *See*—
Takigawa, Toshiji; and Kida, Junichi, 4,242,781, Cl. 29-113.0AD.
Kida, Kunio: *See*—
Moriyama, Aritsune; and Kida, Kunio, 4,242,811, Cl. 34-150.000.
Kii, Masami, to Mitsubishi Denki Kabushiki Kaisha. Circuit interrupter with pressure limiting. 4,243,860, Cl. 200-148.00R.
Kikuchi, Hideo: *See*—
Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,243,633, Cl. 422-129.000.
Kilcher-Chemie AG: *See*—
Prolss, Ludwig, 4,243,536, Cl. 210-321.100.
Kilin, Viktor E.: *See*—
Galimov, Anas G.; Gelfand, Mikhail L.; Goldshtein, Boris G.; Kilin, Viktor E.; Sutyagin, Oleg Y.; Tsipenjuk, Yakov I.; Antipov, Georgy A.; and Yankovsky, Oleg A., 4,243,108, Cl. 173-93.000.
Kimberly-Clark Corporation: *See*—
Nissen, Walter D., 4,242,854, Cl. 53-529.000.
Kimura, Yoshimasa: *See*—
Tohyama, Yoshikuni; Kimura, Yoshimasa; Ishida, Masato; and Miyamoto, Koichi, 4,243,311, Cl. 355-8.000.
Kincaid, Thomas R., to DG Shelter Products Company. Pie segment shaped flammable artificial firelog. 4,243,394, Cl. 44-14.000.
Kindlmann, Peter J.: *See*—
Bliven, Andrew W., II; and Kindlmann, Peter J., 4,243,938, Cl. 324-169.000.
King, Josef: *See*—
Ganter, Wolfgang; Ginter, Albert; King, Josef; and Riis, Peter, 4,244,038, Cl. 368-35.000.
Kingsley, G. Howard: *See*—
Mavis, Robert C., 4,243,564, Cl. 260-17.4ST.
Kinnear, Joseph D., to Brad Harrison Company. Low profile battery connector. 4,243,292, Cl. 339-224.000.
Kinoshita, Shozo: *See*—
Ueda, Takeshi; Kinoshita, Shozo; Sasaguri, Kiichiro; and Kobayashi, Hidehiko, 4,243,746, Cl. 430-346.000.
Kirksey, J. Frank, to General Tire & Rubber Company, The. Yarn twister ring lubricant. 4,242,861, Cl. 57-120.000.
Kirsinas, Peter, Jr., to Panduit Corp. Portable tool for mass termination connector. 4,242,792, Cl. 29-857.000.
Kis-Tamas, Attila: *See*—
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefko, Bela; and Kis-Tamas, Attila, 4,243,660, Cl. 424-84.000.
Kiss, Alexander S.; and Leslie, Frank B. Web ladder release mechanism. 4,243,121, Cl. 182-196.000.
Kita, Yasushi: *See*—
Watanabe, Nobuatsu; and Kita, Yasushi, 4,243,615, Cl. 570-150.000.
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, to Nippon Hoso Kyokai; and Canon Kabushiki Kaisha. Control device for television camera. 4,244,006, Cl. 358-210.000.
Kitakaze, Fukuzo: *See*—
Miyakoshi, Isamu; Ito, Kenji; Azuma, Hideo; Kitakaze, Fukuzo; Tomotaki, Takamichi; and Takehara, Yasuo, 4,243,132, Cl. 193-40.000.
Kiwala, Jacob: *See*—
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,243,823, Cl. 568-824.000.
Kleider, Albert: *See*—
Armbruster, Gerhard; Kleider, Albert; and Vogel, Eberhard, 4,242,839, Cl. 51-170.0MT.
Klein, Jean M.; and Lacome, Albert, to Lesieur-Cotelle & Associes S.A. Process for the production of a liquid edible oil from fatty materials having a high content of saturated fatty acids and the oil produced by the process. 4,243,603, Cl. 260-410.700.
Kleine, Werner, to Gebruder Heller Verwaltungsgesellschaft mit beschrankter Haftung. Drilling head of a rotary impact drill. 4,243,113, Cl. 175-410.000.
Kleinman, Edward B. Display table. 4,242,971, Cl. 108-26.000.
Kleinschmidt, Peter, to Siemens Aktiengesellschaft. Burglar alarm security circuit arrangement. 4,243,979, Cl. 340-554.000.
Kliesch, Howard C.; McWilliams, Daniel N.; Pratt, Roy E.; and Schmude, Donald H., to Texaco Inc. Fluid catalytic cracking unit yield monitor. 4,243,630, Cl. 422-62.000.
Kline, Leo. Freeze-dried natural sour dough starter. 4,243,687, Cl. 426-62.000.
Klockner-Humboldt-Deutz AG: *See*—
Horn, Hannes S.; and Buchner, Heinrich, 4,243,379, Cl. 432-14.000.
Klug, Hans: *See*—
Petersen, Harro; Fischer, Kurt; Klug, Hans; Trimborn, Werner; and Schmidt, Horst, 4,243,797, Cl. 528-239.000.
Kluger, Michael A., to Bendix Corporation, The. Automatic non-servo brake adjuster. 4,243,124, Cl. 188-79.50P.
Klygis, Mindaugas J., to Illinois Tool Works Inc. Vessel structure. 4,243,162, Cl. 222-530.000.
Knape & Vogt Manufacturing Co.: *See*—
Fortuna, John E., 4,243,277, Cl. 308-195.000.
Knapp, Heinrich, to Robert Bosch GmbH. Fuel injection system. 4,243,003, Cl. 123-442.000.
Knapp, Kenneth M. Pipeline pig. 4,242,771, Cl. 15-104.06R.
Knauer, Karl, to Siemens Aktiengesellschaft. Highly integrated dynamic memory element. 4,244,035, Cl. 365-149.000.
Knepp, James E.; Johnston, William G.; and Jursich, Myron J., to Aluminum Company of America. Synthetic metal working lubricant. 4,243,537, Cl. 252-49.300.
Knight, George W.: *See*—
Birkelbach, Donald F.; and Knight, George W., 4,243,785, Cl. 526-115.000.
Knippi "Niproruda": *See*—
Denev, Stoyan I.; and Davcheva, Nadejda G., 4,243,520, Cl. 209-10.000.
Knopf, Robert J.: *See*—
Koleske, Joseph V.; Knopf, Robert J.; and Smith, Oliver W., 4,243,569, Cl. 260-29.6TA.
Knowles, Warren D.; and Coulombe, Lionel J., to Singer Company, The. Needle support means. 4,242,975, Cl. 112-226.000.
Koba, Keichiro: *See*—
Sugimura, Hidehiko; and Koba, Keichiro, 4,243,488, Cl. 201-6.000.
Kobale, Manfred; Lorenz, Hans-Peter; and Wengert, Rolf, to Siemens Aktiengesellschaft. Method of producing light-absorbing edging about phosphor dots on color image screens. 4,243,735, Cl. 430-25.000.
Kobashi, Kiyoshi: *See*—
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Inoue, Tokuta; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,242,997, Cl. 123-568.000.
Kobayashi, Hajime; Koumura, Noboru; and Ohno, Shigeru, to Canon Kabushiki Kaisha. Liquid recording medium. 4,243,994, Cl. 346-140.00R.
Kobayashi, Hidehiko: *See*—
Ueda, Takeshi; Kinoshita, Shozo; Sasaguri, Kiichiro; and Kobayashi, Hidehiko, 4,243,746, Cl. 430-346.000.
Kobayashi, Katsumi: *See*—
Ishihara, Eisuke; Yonehara, Hiroshi; Akasaki, Katsuyuki; Minowa, Masao; and Kobayashi, Katsumi, 4,243,661, Cl. 424-117.000.
Kobayashi, Tsutumo: *See*—
Glass, Howard L.; Liaw, Jiin-Herny W.; and Kobayashi, Tsutumo, 4,243,697, Cl. 427-47.000.
Kobe, Inc.: *See*—
Hubbard, Martin G.; and Jackson, William E., 4,243,528, Cl. 210-104.000.
Kochi, Hiromi: *See*—
Akima, Tosio; Kudou, Etsuzaburo; Kaneyasu, Tetsuo; and Kochi, Hiromi, 4,243,784, Cl. 526-88.000.
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Inoue, Tokuta; Oishi, Kiyohiko; and Kobashi, Kiyoshi, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation system for internal combustion engines. 4,242,997, Cl. 123-568.000.
Kohl, Clyde B.; Kendrick, George B.; and Fleming, Raymond T., to GTE Products Corporation. Lamp having reduced width press-seal. 4,243,907, Cl. 313-318.000.
Kokeguchi, Sadao; Takahashi, Hiroshi; Okada, Ken; and Murakami, Sanpei, to Kanebo Foods Ltd. Non-fried instant cooking dry noodles and a method for producing such noodles. 4,243,689, Cl. 426-557.000.
Kokeguchi, Sadao: *See*—
Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,243,690, Cl. 426-557.000.
Kokin, Vilyam N.: *See*—
Nazarian, Artashes R.; Kremlev, Vyacheslav Y.; Kokin, Vilyam N.; Sladkov, Viktor I.; Venkov, Boris V.; and Lavrov, Vadim V., 4,243,895, Cl. 307-205.000.
Kokus, Hans-Dieter: *See*—
Bartholomaus, Reiner; Bernhardt, Karl-Heinz; Eberhard, Wolfgang; Kokus, Hans-Dieter; Lembke, Herbert; and Schulte, Heinz, 4,242,942, Cl. 91-358.00R.
Koleske, Joseph V.; Knopf, Robert J.; and Smith, Oliver W., to Union Carbide Corporation. High solids compositions containing ester diol alkoxylate and aqueous acrylic latex. 4,243,569, Cl. 260-29.6TA.
Kolling, Georg: *See*—
Handrick, Kurt; and Kolling, Georg, 4,243,590, Cl. 260-319.100.
Komeiji, Shigeki; Futamura, Yoshisumi; Mizobe, Tsugio; Okayama, Morio; and Iwasaki, Isao, to Toyota Jidosha Kogyo Kabushiki Kaisha. External member for a tripod joint and method for manufacturing same. 4,242,888, Cl. 64-21.000.
Kominami, Naoya: *See*—
Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, 4,243,532, Cl. 210-196.000.
Konigsberg, Moses: *See*—
Mavis, Robert C., 4,243,564, Cl. 260-17.4ST.
Koninklijke Bos Kalis Westminster Group N.V.: *See*—
Vermeulen, Teunis, 4,242,815, Cl. 37-58.000.
Koninklijke Emballage Industrie Van Leer B.V.: *See*—
Gash, Duggan J., 4,243,463, Cl. 156-324.000.
Kooya, Kazuo: *See*—
Takamizawa, Minoru; Okamoto, Haruo; Umemura, Mitsuo; and Kooya, Kazuo, 4,243,607, Cl. 570-257.000.
Koposov, Valery V.: *See*—
Kruglikov, Anatoly A.; Nikolaeva, Militina A.; Vasin, Jury P.; Itkis, Zolya Y.; Shirinkin, Vladimir A.; Zimina, Ida A.; Strupinsky, Vladimir A.; and Koposov, Valery V., 4,243,780, Cl. 525-518.000.
Koppel, Gary A.: *See*—
Cooper, Robin D. G.; Koppel, Gary A.; and McShane, Lawrence J., 4,243,587, Cl. 260-245.400.

Koppensteiner, James V.: *See—*
Jameel, Khaja M.; and Koppensteiner, James V., 4,243,963, Cl. 335-151.000.

Koritsu Kikai Kogyo Company Limited: *See—*
Tsuzuki, Akira; and Miura, Atsushi, 4,243,490, Cl. 202-241.000.

Kornbaum, Simon, to Ato Chimie. Process for manufacturing thermoplastic compositions and containers made of such compositions. 4,243,627, Cl. 264-171.000.

Kortman, Jan C., to Goodyear Tire & Rubber Company, The. Building and shaping a tire. 4,243,451, Cl. 156-132.000.

Kosaka, Takao; and Tahara, Yukio, to Mitsubishi Paper Mills, Ltd. Thermal sensitive paper minimized in residue deposition on thermal head. 4,243,716, Cl. 428-327.000.

Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Fluoroaliphaticsulfonyl substituted ethylenes catalysts in polymerization processes. 4,243,783, Cl. 526-225.000.

Kosten, Geerard J., to Lummus Company, The. Cooling tower. 4,243,095, Cl. 165-125.000.

Kosuga, Zinzo: *See—*
Shirai, Haruo; Tanaka, Yoshikatsu; Kosuga, Zinzo; and Osaka, Kiyoshi, 4,243,474, Cl. 156-630.000.

Kotschwar, Rex R. Beverage cooler. 4,242,884, Cl. 62-371.000.

Koumura, Noboru: *See—*
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Kowalczyk, John S.: *See—*
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Kozel, Charles A., to Methode Electronics, Inc. Electrical male connector assembly. 4,243,289, Cl. 339-126.0RS.

Kozel, Charles A.: *See—*
Brown, Vincent B.; Kozel, Charles A.; and Scheitz, John T., 4,243,286, Cl. 339-97.00R.

Kraftwerk Union AG: *See—*
Weber, Robert, 4,243,889, Cl. 250-507.000.

Kramer, Charles J., to Xerox Corporation. Holographic scanner insensitive to mechanical wobble. 4,243,293, Cl. 350-3.710.

Kramer, George M.: *See—*
Hall, Richard B.; Kaldor, Andrew; Kramer, George M.; and Dines, Martin B., 4,243,597, Cl. 260-347.800.

Krapcho, John, to E. R. Squibb & Sons, Inc. Heterocyclic containing amines. 4,243,804, Cl. 544-162.000.

Krasnov, Boleslav M.: *See—*
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Krastinat, Walter, to Byk Gulden Lomberg Chemische Fabrik GmbH. Acylhydrocarbylaminoalkanoic acids, compositions and uses. 4,243,678, Cl. 424-319.000.

Krebs, Fred G.: *See—*
Wallace, Harry L.; Horak, Anthony; Krebs, Fred G.; and Brown, Louis R., 4,243,330, Cl. 400-194.000.

Kremlev, Vyacheslav Y.: *See—*
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Kresge, James S., to General Electric Company. Method for manufacturing zinc oxide varistors having reduced voltage drift. 4,243,622, Cl. 264-66.000.

Krespan, Carl G.: *See—*
Fang, James C.; and Krespan, Carl G., 4,243,504, Cl. 204-296.000.

Kreuzburg, Gerhard: *See—*
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Kristen, Klaus; and Scheidler, Herwig, to JENAer Glaswerk Schott & Gen. Vitreous ceramic cooker hob plate with permanently elastically adhesively attached circumferentially surrounding frame. 4,243,016, Cl. 126-211.000.

Krob, Erwin, to TMC Corporation. Safety ski binding. 4,243,245, Cl. 280-626.000.

Kroy Industries, Inc.: *See—*
Bradshaw, Franklin C.; Connoy, Thomas P.; and Deutsch, Dennis A., 4,243,333, Cl. 400-158.000.

Kruger, Hans-Rudolf; Arndt, Friedrich; and Rusch, Reinhart, to Schering Aktiengesellschaft. 1,2,3-Thiadiazole-3-in-5-ylidene-urea derivatives, process for making the same and compositions containing the same having growth regulating activity for plants. 4,243,404, Cl. 71-73.000.

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Melhorn, Barry J.; and Krulikowski, Alex, 4,242,924, Cl. 74-759.000.

Kubelka, Axel, to Polyair Produkt Design GmbH. Device for drawing a boot off the foot. 4,243,163, Cl. 223-115.000.

Kubota Ltd.: *See—*
Tamura, Hideo; and Ibuki, Seiro, 4,243,429, Cl. 106-306.000.

Kudou, Etsuzaburo: *See—*
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Kuehn, Erich, to ICI Americas Inc. Isocyanurate solutions. 4,243,788, Cl. 526-261.000.

Kugler, Tibor, to Swiss Aluminium Ltd. Cathode for a reduction pot for the electrolysis of a molten charge. 4,243,502, Cl. 204-243.00R.

Kukulies, Erwin; and Dietrich, Guenther, to Malmedie & Co. Maschinenfabrik GmbH. Apparatus for forming long workpieces in presses. 4,242,896, Cl. 72-345.000.

Kume, Makoto, to Nippon Sheet Glass Co., Ltd. Alkali-resistant glass composition. 4,243,421, Cl. 106-50.000.

Kume, Toshiaki: *See—*
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kakinuma, Toshihide; and Kume, Toshiaki, 4,242,973, Cl. 112-158.00E.

Kumiai Chemical Industry Co., Ltd.: *See—*
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Kuntner, Richard J.; and Van der Meer, James C., to Eaton Corporation. Solid state motor control universal assembly means and method. 4,243,894, Cl. 307-147.000.

Kuntzmann, Jean-Claude: *See—*
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Kurashima, Hideo. Cufflink. 4,242,776, Cl. 24-41.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Asano, Kiro; Saito, Tsuyoshi; Hatanaka, Masayoshi; and Ikeda, Susumu, 4,243,662, Cl. 424-180.000.
Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,243,633, Cl. 422-129.000.
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Kurth, Donald D.: *See—*
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Kuttler, Otto; and Muller, Klaus, to A. Raymond. Clamp-like, sheet-metal, slip-on nut. 4,243,086, Cl. 411-174.000.

La Pierre Synthetique Baikowski, S.A.: *See—*
Yancey, Paul J., 4,242,842, Cl. 51-298.000.

Labonville, Emilien. Skidder ring and chain connecting means. 4,243,088, Cl. 152-223.000.

Lacome, Albert: *See—*
Klein, Jean M.; and Lacome, Albert, 4,243,603, Cl. 260-410.700.

LaCourse, Y. Ronald. Hip stabilizer. 4,243,027, Cl. 128-80.00F.

Ladder of Life, Inc.: *See—*
Rossey, Eugene, Sr., 4,243,119, Cl. 182-96.000.

Ladney, Michael, Jr.: *See—*
Wright, Leslie S., Jr., 4,243,501, Cl. 204-180.00P.

Laesser, Claude, to Ebauches S.A. Electro-mechanical watch. 4,244,039, Cl. 368-66.000.

Lafa, Jury I.: *See—*
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Lahoda, Edward J., to Westinghouse Electric Corp. All dry solid potassium seed regeneration system for magnetohydrodynamic power generation plant. 4,243,645, Cl. 423-428.000.

Laimer, Friedrich, to Voest-Alpine Aktiengesellschaft. Converter plant. 4,243,208, Cl. 266-158.000.

Lal, Joginder; and Walters, Sandra J., to Goodyear Tire & Rubber Company, The. Composition and method of improving the green strength of unvulcanized [elastomer] reclaimed rubber elastomer blends. 4,243,561, Cl. 260-4.00R.

Lambert, Charles O.: *See—*
Hogan, James J.; Lambert, Charles O.; and Wallace, Gene A., 4,244,029, Cl. 364-728.000.

Lamberti, Vincent, to Lever Brothers Company. Method for the preparation of carboxymethyloxysuccinic acid. 4,243,820, Cl. 562-583.000.

Lamberton & Company Limited: *See—*
Young, Andrew, 4,243,131, Cl. 193-35.0MD.

Lamberty, Bernard J.; and Andrews, George S., to Boeing Company, The. Broadband center-fed spiral antenna. 4,243,993, Cl. 343-895.000.

Lambie, John W., to Neptune Glenfield Limited. Fluid flow control valves. 4,243,066, Cl. 137-202.000.

Lampkin, Curtis M.: *See—*
Jordan, John F.; and Lampkin, Curtis M., 4,243,432, Cl. 136-244.000.

Lampson, Neil F., to Riggers Manufacturing Company. Counterbalanced tower crane. 4,243,148, Cl. 212-196.000.

Landoll, Leo M., to Hercules Incorporated. Surfactant-soluble cellulose derivatives. 4,243,802, Cl. 536-91.000.

Landry, Milton E. Non-conductive safety line and method. 4,243,118, Cl. 182-3.000.

Lane, Leo D.: *See—*
Wisler, Allen E.; and Lane, Leo D., 4,243,727, Cl. 428-558.000.

Langsadl, Leon: *See—*
Protiva, Miroslav; Rajsner, Miroslav; Sindelar, Karel; Jilek, Jiri; Bartl, Vaclav; Metysova, Jirina; Dlabac, Antonin; Langsadl, Leon; Pomykacek, Josef; and Miksik, Frantisek, 4,243,805, Cl. 544-375.000.

Lankard, John R.: *See—*
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Lansing Bagnall Limited: *See—*
Shackleford, Geoffrey G., 4,243,257, Cl. 294-88.000.

Larkin, Joseph F.; Cassidy, Harold M.; Woodcock, John W.; and Dunn, William M., to TRW Inc. Digital tuning element and method of making same. 4,243,962, Cl. 334-7.000.

LaRooka, Mary A. Irrigation-debridement-repair caddy. 4,243,214, Cl. 269-327.000.
Larson, Willis A., to Oak Industries Inc. Membrane switch with means for impeding silver migration. 4,243,852, Cl. 200-5.00A.
Lasperas nee Marnier, Monique: *See*—
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Laurent, Henry: *See*—
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Laurenz, Frank R., to Agricultural Research and Development Inc. Barn or pit floor scraper assembly and drive means therefor. 4,243,137, Cl. 198-748.000.
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Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,243,403, Cl. 71-67.000.
Lawes, Michael J. A. Loose leaf binders. 4,243,459, Cl. 156-272.000.
Lawrence, James E., Jr.: *See*—
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,243,075, Cl. 138-174.000.
Lazarevich, Vladeta D.: *See*—
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Leal Lara, Hermilo: *See*—
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Lebailly, Jacques; and Varon, Jacques, to U.S. Philips Corporation. Electroluminescent semiconductor device. 4,243,996, Cl. 357-17.000.
Leboutet, Hubert; and Tronc, Dominique, to C.G.R.MeV. Magnetic mirror for beams of charged particles accelerated in an accelerator. 4,243,916, €l. 315-111.800.
Lecolier, Serge L.: *See*—
Boileau, Sylvie L.; Caubere, Paul J.; Ndebeka, Gilberte; Lecolier, Serge L.; and Raynal, Serge F., 4,243,787, Cl. 526-180.000.
Ledford, James B.; and Niederer, Edward, Jr. Manually operated pincer mechanism for pipelines. 4,242,903, Cl. 72-413.000.
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Lee, John M.; and Bauman, William C., to Dow Chemical Company, The. Composition for recovery of MG^{++} from brines. 4,243,555, Cl. 252-441.000.
LeFevre, Clyde E.: *See*—
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Lefevre, Lloyd E.; and Wegenka, Mark A., to Dow Chemical Company, The. Apparatus for forming starting tail for film rolls. 4,243,366, Cl. 425-303.000.
Legille, Edouard; Mahr, Rene; and Mailliet, Pierre, to Paul Wurth S.A. Method of and apparatus for charging a furnace. 4,243,351, Cl. 414-206.000.
Legler, Rudolf F.: *See*—
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Legory, John E.: *See*—
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Lehnhoff, Kurt; and Schael, Wilfried, to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG. Haemofiltration with filtrate flow control by adjustable venting. 4,243,530, Cl. 210-137.000.
Leighton, Robert D., to Alden Research Foundation. Polarized electrical outlet. 4,243,291, Cl. 339-184.00M.
Leingartner, Josef: *See*—
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Leister, Harry M.: *See*—
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Lemoussu, Michel; and Cardot, Claude, to Compagnie Industrielle des Telecommunications cit Alcatel. Automatic equalizer for a synchronous digital transmission signal. 4,243,956, Cl. 333-18.000.
Lenaerts, George V.; Perks, Roger; and Dudley, Phillip J., to Northern Telecom Limited. Pushbutton switch assembly for telecommunications and other input apparatus. 4,243,846, Cl. 179-90.00K.
Lenart, Tibor, to Aktiebolaget Multilab. Recharging accumulator batteries. 4,243,929, Cl. 320-23.000.
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Lennon, Donald J. J.; and Clapp, Roger E., to EPP Corp. Structured donor sheet for high-resolution non-impact printer. 4,243,726, Cl. 428-545.000.
Lenz, Arnold; Kreuzburg, Gerhard; and Haase, Rainer, to Dynamit Nobel Aktiengesellschaft. Granular quartz glass product. 4,243,422, Cl. 106-52.000.
Lenzen, Glenn H.: *See*—
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Leonard, Martin. Particulate material separator and method. 4,243,527, Cl. 210-785.000.
Leonhart, Xaver F. Separately useable pull-out table leaf. 4,242,967, Cl. 108-11.000.
Leroy, Pierre J.; Bastien, Jean P.; and Sprunck, Emile J., to Creusot-Loire. Tuyere for use in refining liquid metals. 4,243,211, Cl. 266-268.000.
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Les Fils d'Auguste Chomarat & Cie: *See*—
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Hillenkamp, Franz; Kaufmann, Raimund; Unsold, Eberhard; Nietsche, Rainer; Wechsung, Reiner; Vogt, Henning; Bank, Walter; and Aberle, Lothar, 4,243,887, Cl. 250-423.00P.
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Hersener, Jurgen; and Wilhelm, Alfred, 4,243,742, Cl. 430-270.000.
Marzel, Otto; Schwedes, Wilhelm; and Wilhelm, Alfred, 4,243,698, Cl. 427-157.000.
Schlangenotto, Heinrich; Sawitzki, Friedhelm; and Henson, Ronald, 4,243,998, Cl. 357-28.000.
Schroder, Ernst, 4,243,944, Cl. 330-135.000.
Lichtblau, George J. Antenna system for electronic security installations. 4,243,980, Cl. 340-572.000.
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Ackeret, Peter, 4,242,820, Cl. 40-513.000.
Lieb, Donald F.; and Suchanski, Mary R., to Diamond Shamrock Corporation. Method and electrode with admixed fillers. 4,243,503, Cl. 204-290.00F.
Liedel, Thomas H.: *See*—
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Liepmann, Hans-Gunther: *See*—
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Lim, Gary M. F.; and Endo, Masaki, to Bristol-Myers Company. Production of 7-(2-aminomethylphenylacetamido)-3-(1-carboxymethyltetrazol-5-ylthiomethyl)-3-cephem-4-carboxylic acid. 4,243,803, Cl. 544-26.000.
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Lind, David J.; Coffey, Valerie J.; and Hallam, Joyce, to Rolls-Royce Limited. Treatment of carbon fibre. 4,243,646, Cl. 423-447.100.
Lindee, Scott A., to Sterling Manufacturing, Inc. Labeling apparatus. 4,243,466, Cl. 156-363.000.
Lindquist, William W. Floor or roof drain fitting. 4,243,251, Cl. 285-4.000.
Lintott, David A., to Sprague Electric Company. AC Electrolytic motor start capacitor. 4,244,010, Cl. 361-433.000.
Lipets, Adolf U.; Krasnov, Boleslav M.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; Galuskin, Vadim B.; Lafa, Jury I.; Alexandrov, Boris I.; and Gromov, Gennady V. Multipass corrosion-proof air heater. 4,243,096, Cl. 165-134.0DP.

Littleford, Philip O. Method for inserting pacemaker electrodes and the like. 4,243,050, Cl. 128-784.000.
Littman, Erwin J. Hammer with chipping blade. 4,242,780, Cl. 29-81.00D.
Litton Systems, Inc.: *See—*
Beebe, Ronald F., 4,244,015, Cl. 363-8.000.
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Ekins, Roger P.; and Soini, Erkki, 4,243,880, Cl. 250-252.000.
Lobbe, Armin; and Grisebach, Hans-Th., to Gewerkschaft Eisenhutte Westfalia. Mineral mining installation with planer and jet carrier. 4,243,268, Cl. 299-32.000.
Lobbestael, David A. Closure for a beverage receptacle. 4,243,156, Cl. 222-541.000.
Locher, Johannes: *See—*
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Lockwood, Harry F.; and McGee, Thomas F., to Exxon Research & Engineering Co. Microwave curing of photoresist films. 4,243,744, Cl. 430-325.000.
Loctite Corporation: *See—*
O'Sullivan, Denis J.; Bolger, Bernard J.; and Casey, T. Eisirt, 4,243,578, Cl. 260-42.520.
Lodzinski, Fred P., to Nekoosa Papers, Inc. Optical property measurement system and method. 4,243,319, Cl. 356-73.000.
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Freeman, Carl D.; and Grover, Melvin G., 4,243,154, Cl. 221-253.000.
Logioco, John W., to Bell Telephone Laboratories, Incorporated. Cable closure rehabilitation apparatus. 4,243,834, Cl. 174-38.000.
Lohse, Siegfried. Fine grinding apparatus. 4,242,837, Cl. 51-59.00R.
Loiacono, Gabriel M.: *See—*
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Long, George W. Anchor guide. 4,242,977, Cl. 114-210.000.
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Warnaka, Glenn E., 4,243,117, Cl. 181-286.000.
Lorea, Gianfranco. Method and apparatus for measuring the amplitude and the group delay for each side-band of an amplitude modulated transmitter. 4,244,054, Cl. 455-115.000.
Lorenz, Hans-Peter: *See—*
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Los Angeles Scientific Instrument Co. Inc.: *See—*
Buerner, Wolfgang P., 4,242,804, Cl. 33-438.000.
Louzos, Demetrios V.: *See—*
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Lovelace, Ralph: *See—*
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Lowe, Henry E., Jr. Deicing and traction forming composition and method of making same. 4,243,415, Cl. 106-13.000.
Loy, John W. Hooded kite. 4,243,191, Cl. 244-153.00R.
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Lummus Company, The: *See—*
Kosten, Geerard J., 4,243,095, Cl. 165-125.000.
Tsao, Utah, 4,243,650, Cl. 423-659.000.
Lundell, Karl E. B.: *See—*
Tisell, Claes-Gustav E. Y.; Lundell, Karl E. B.; Horner, Sven H. N.; Thorstensson, Gustav Y.; and Karlstedt, Gustav S. E., 4,242,945, Cl. 92-26.000.
Lundgren, William E., to Keeler, Lawrence M. Thread spinning apparatus. 4,242,859, Cl. 57-58.890.
Lundy Electronics & Systems, Inc.: *See—*
Nagler, Robert T., 4,243,460, Cl. 156-275.000.
Luthi, Oscar, to Ingersoll-Rand Company. Paper web drying system and process. 4,242,808, Cl. 34-23.000.
Luukkainen, Yrjo: *See—*
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Lynch Communication Systems, Inc.: *See—*
DeCoursey, Calvin H., 4,243,930, Cl. 370-110.000.
Lynch, Harry J.; and Rivest, Robert W., to Massachusetts Institute of Technology. Implantable programmed microinfusion apparatus. 4,243,030, Cl. 128-213.00R.
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Orliaguet, Maurice; and Colas, Christian F., 4,242,852, Cl. 53-89.000.
Maag, William L.: *See—*
Rom, Frank E.; Wenzler, Carl J.; and Maag, William L., 4,243,023, Cl. 126-449.000.
Maag Zahnrader & Maschinen AG: *See—*
Sigg, Hans, 4,242,920, Cl. 74-361.000.
Maas, Michael, to Siemens Aktiengesellschaft. Method and apparatus for the suppression of interference signals in a useful signal. 4,243,045, Cl. 128-696.000.
MacAnally, Richard B.: *See—*
Chase, Charles P.; and MacAnally, Richard B., 4,242,761, Cl. 3-13.000.
MacGregor, Donald D., to MacGregor, Donald Dewayne; and MacGregor, Jean Ann. Apparatus for the display and protection of awards. 4,243,340, Cl. 40-312.000.
MacGregor, Donald Dewayne: *See—*
MacGregor, Donald D., 4,243,340, Cl. 40-312.000.
MacGregor, Jean Ann: *See—*
MacGregor, Donald D., 4,243,340, Cl. 40-312.000.
Machlett Laboratories, Inc., The: *See—*
Caraher, James R., 4,243,904, Cl. 313-99.000.
Mack, Lawrence W. Butterfly valve. 4,243,203, Cl. 251-305.000.
Mack, Rodney L., to Du Pont de Nemours, E. I., and Company. Wide dynamic range analog to digital converter. 4,243,974, Cl. 340-347.0NT.
MacKenzie, Gordon C.: *See—*
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MacLeay, Ronald E.; and Kazmierczak, Robert T., to Pennwalt Corporation. Process for the preparation of symmetrical dicumyl peroxides. 4,243,821, Cl. 568-561.000.
MacMillan, Jake: *See—*
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Macourek, Peter H.: *See—*
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Maes, Reed E., Jr., to Environmental Research Institute of Michigan. Greenhouse and method of growing plants in cold climates. 4,242,833, Cl. 47-17.000.
Magalhaes, Gustavo. Process for preparation of raw material minimizing the size degradation of anatase ore. 4,243,179, Cl. 241-24.000.
Magin, Ralph W., to Monsanto Company. Poly(vinyl phosphonomethylene amino carboxylates) and process for preparation. 4,243,591, Cl. 260-326.220.
Magrini, Kenneth H.; and Jones, Raymond B., to Ferro Corporation. Thermoplastic electrode ink for the manufacture of ceramic multilayer capacitor. 4,243,710, Cl. 428-208.000.
Magusa, Harumi: *See—*
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Mailliet, Pierre: *See—*
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Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kakinuma, Toshihide; and Kume, Toshiaki, to Janome Sewing Machine Co. Ltd. Sewing machine with electronic patterning system. 4,242,973, Cl. 112-158.00E.
Maklad, Mokhtar S.: *See—*
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Makris, James S.: *See—*
Barile, Conrad A.; Goth, Goerge R.; Makris, James S.; Nagarajan, Arunachala; and Raheja, Raj K., 4,243,435, Cl. 148-1.500.
Mallard, Robert G. Loom rapier drive mechanism. 4,243,076, Cl. 139-449.000.
Malloy, Thomas P.; and Lester, George W., to UOP Inc. Removal of peroxides and color bodies from internal olefins by solid adsorbents. 4,243,831, Cl. 585-824.000.
Malmedie & Co. Maschinenfabrik GmbH: *See—*
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Mancini, Giuseppe; and Imparato, Luigi, to Snamprogetti S.p.A. Organic esters for lubricating compositions. 4,243,540, Cl. 252-56.00S.
Mannesmannrohren-Werke A.G.: *See—*
Gruber, Kurt; Keim, Willi; and Hentschel, Klaus, 4,243,493, Cl. 203-66.000.
Mansukhani, Ishwar R., to Whittaker Corporation. Jet ink process and ink composition fluorescent in ultraviolet light. 4,243,694, Cl. 427-14.100.
Manwiller, Carl H., to Du Pont de Nemours, E. I., and Company. Poly(meta-phenylene isophthalamide) molding compositions. 4,243,574, Cl. 260-37.00N.
Marathon Oil Company: *See—*
Allred, Victor D., 4,243,511, Cl. 208-11.00R.
Marcella, Joseph. Remotely-perceptible impact-indicating projectile target. 4,243,228, Cl. 273-378.000.
Marchionda, Tony. Self-adjusting tire chain. 4,243,087, Cl. 152-218.000.

Marconi, Walter; Pittalis, Francesco; Bartoli, Francesco; and Morisi, Franco, to Snamprogetti S.p.A. Preparation of non-thrombogenic polymeric material article with platelet anti-aggregative agent. 4,243,776, Cl. 525-420.000.

Margulies, Herman, to Sterling Drug Inc. Bend and peel blister strip package. 4,243,144, Cl. 206-532.000.

Marion Bronze Company: *See*—
Chill, James L.; Taylor, Harry H.; and Granger, Evertt H., 4,243,437, Cl. 148-11.50C.

Mark Controls Corporation: *See*—
Atkinson, Gaylen V., 4,243,173, Cl. 236-46.00R.

Mark, Victor; and Wilson, Phillip S., to General Electric Company. Plasticized polycarbonate composition. 4,243,570, Cl. 260-30.200.

Marquette Metal Products Company: *See*—
Anderson, J. Edward C., 4,243,109, Cl. 173-93.500.

Marriott, William H., Jr.: *See*—
Hanneken, Henry P.; and Marriott, William H., Jr., 4,242,782, Cl. 29-129.000.

Martin, Archer J. P.; and Hampson, Frank, to National Research Development Corporation. Membrane electrophoresis. 4,243,507, Cl. 204-301.000.

Martin, Charles W.; and Ward, Eldon L., to Dow Chemical Company, The. (Bis)dithiocarbamate) salts. 4,243,675, Cl. 424-286.000.

Martin, Henry E., to Mediscan, Inc. Ultrasonic medical diagnostic apparatus and method. 4,242,911, Cl. 73-620.000.

Martin Marietta Corporation: *See*—
Moredock, Jerry L.; Wagner, James E.; and Hyder, Jonnie O., 4,242,961, Cl. 102-93.000.

Martin, Paul E.: *See*—
Clinch, Marvin R.; Graf, Calvin R.; Martin, Paul E.; and Fenwick, Robert B., 4,244,053, Cl. 455-29.000.

Martino, Germain; and Miquel, Jean, to Societe Francaise des Produits pour Catalyse. Catalytic hydroreforming process. 4,243,516, Cl. 208-139.000.

Marto, John H., to J. I. Case Company. Snap fast fastener. 4,243,342, Cl. 403-324.000.

Maruzen Oil Co., Ltd.: *See*—
Minagawa, Motonobu; Akutsu, Mitsuo; Fujiwara, Hiroshi; and Kashiki, Masayuki, 4,243,581, Cl. 260-45.85S.

Marvin, Ira E.: *See*—
Cornett, Jack E.; Saunders, Andrew A., Jr.; Marvin, Ira E.; and Beitler, Richard S., 4,242,864, Cl. 60-226.00R.

Marx, Matthias; Nissen, Dietmar; and Jarre, Wolfgang, to BASF Aktiengesellschaft. Process for the manufacture of reinforced polyurethane foams. 4,243,755, Cl. 521-99.000.

Marzalek, Michael S.; and Wheelwright, Lynn M., to Hewlett-Packard Company. Spectrum analyzer having enterable offsets and automatic display zoom. 4,244,024, Cl. 364-485.000.

Marzel, Otto; Schwedes, Wilhelm; and Wilhelm, Alfred, to Licentia Patent-Verwaltungs-G.m.b.H. Method for producing a pigment coating. 4,243,698, Cl. 427-157.000.

Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., to Owens-Corning Fiberglas Corporation. Asphalt compositions modified with organo-silane compounds. 4,243,426, Cl. 106-273.00R.

Mascioni, Umberto; Giani, Adolfo; and Panseri, Mario, to Reggiani S.p.A. Process and apparatus for the printing of sponge-cloths and the like. 4,242,957, Cl. 101-126.000.

Maslennikov, Pavel N.: *See*—
Ushakov, Vladimir F.; Pergunov, Alexandr I.; Alexeev, Albert V.; Maslennikov, Pavel N.; and Seljutin, Vladimir I., 4,242,841, Cl. 51-263.000.

Massachusetts Institute of Technology: *See*—
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Swartz, Mitchell R., 4,243,751, Cl. 435-168.000.
Whitney, Daniel E.; and Nevins, James L., Jr., 4,243,923, Cl. 318-561.000.

Massaro, Margaret F. Meat tenderer. 4,242,774, Cl. 17-28.000.

Massey-Ferguson Inc.: *See*—
Dwyer, Robert M., 4,243,271, Cl. 303-7.000.

Massey-Ferguson Services N.V.: *See*—
Skubich, Otto; Perkert, Rudolf; and Fischer, Karl Heinz, 4,243,106, Cl. 172-804.000.

Masuda, Eiji; and Suzuki, Yasoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Analog-to-digital converter. 4,243,975, Cl. 340-347.0NT.

Masuda, Shunichi; and Shimizu, Katsuichi, to Canon Kabushiki Kaisha. Image forming device. 4,243,313, Cl. 355-14.00R.

Masujima, Sho; and Yoshihito, Yamamoto, to Tokyo Denki Kagaku Kogyo Kabushiki Kaisha. Apparatus and process for the manufacture of electronic components. 4,243,139, Cl. 206-330.000.

Masuoka, Fujio: *See*—
Natori, Kenji; and Masuoka, Fujio, 4,243,997, Cl. 357-23.000.

Mather Company, The: *See*—
Repella, James A., 4,243,235, Cl. 277-152.000.

Mather, Douglas E.: *See*—
Messenger, Edward T.; Mather, Douglas E.; and Phillips, Brinley M., 4,243,549, Cl. 252-355.000.

Mathey, Jean M., to Allibert Exploitation, Societe Anonyme. Method of making a luffa composite. 4,243,446, Cl. 156-62.400.

Matier, William L.: *See*—
Morrow, Duane F.; and Matier, William L., 4,243,681, Cl. 424-330.000.

Matsui, Takeshi: *See*—
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Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,243,008, Cl. 123-425.000.

Matsumoto, Yasuji: *See*—
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Matsumura, Kazuhiro: *See*—
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Okawa, Masahisa, 4,243,786, Cl. 526-137.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Takahashi, Kenichi; Fukuyama, Tatsuo; Ueno, Takafumi; Shimada, Yasuomi; and Ishii, Shinichiro, 4,243,839, Cl. 179-1.00F.

Matsushita, Shigeo: *See*—
Nomura, Hidenori; Honmo, Hiroshi; and Matsushita, Shigeo, 4,243,398, Cl. 65-2.000.

Matthews, Horton; York, Kenneth V.; and Goodsmith, Dale H., to Multifastener Corporation. Nut guide for installation head. 4,242,793, Cl. 29-798.000.

Matytsin, Alexei I.: *See*—
Deribas, Andrei A.; Limasov, Alexei I.; Matytsin, Alexei I.; Staver, Anatoly M.; Shebalin, Rudolf I.; and Yashin, Jury N., 4,242,787, Cl. 29-421.00E.

Mautz, Karlheinz: *See*—
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Mavis, Robert C., to Konigsberg, Moses; Fremont, Henry A.; and Kingsley, G. Howard. Reaction products of a hydrolyzed styrene-maleic anhydride copolymer and a dispersed high amylopectin starch product neutralized with a volatile alkali, method of making same, and coating compositions comprising same. 4,243,564, Cl. 260-17.4ST.

May & Baker Limited: *See*—
Broughton, Barbara J.; Caton, Michael P. L.; and Hambling, David J., 4,243,683, Cl. 424-331.000.

Mayhew, Raymond L.: *See*—
O'Lenick, Anthony J., Jr.; and Mayhew, Raymond L., 4,243,602, Cl. 260-403.000.

Mayumi, Masakatsu; Mitooka, Kenji; and Fujiwara, Sigeharu, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Method of molding pipe joints of reinforced resin. 4,243,457, Cl. 156-245.000.

Mazumder, Ali T., to NCR Canada Ltd. - NCR Canada Ltee. Double document detection system. 4,243,216, Cl. 271-263.000.

McAlister, Roy E. Polycarbonates stabilized by halohydrocarbon, halocarbon or silane groups. 4,243,779, Cl. 525-462.000.

McClain, Dorothee M., to National Distillers and Chemical Corp. Alkanolamine processing aid for ethylene-vinyl ester interpolymer particles present in aqueous dispersions thereof. 4,243,762, Cl. 525-6.000.

McClaren, Jay L. Stacked air dryer with air recirculation. 4,242,806, Cl. 34-13.000.

McClintock, Jack M., to Morgan Adhesives Company. Methods for application and use of a composite pressure sensitive adhesive construction. 4,243,453, Cl. 156-152.000.

McCloskey, Albert R., to Heim Universal Corporation, The. Method of manufacturing a spherical bearing. 4,242,784, Cl. 29-149.50B.

McCool, John M.; Widrow, Bernard; Hearn, Robert H.; Zeidler, James R.; Chabries, Douglas M.; and Moore, Randall H., to United States of America, Navy. Adaptive detector. 4,243,935, Cl. 324-77.00R.

McDaniel, Gordon L., to Graham Magnetics Incorporated. Calendar roll system. 4,242,954, Cl. 100-176.000.

McDaniel, Kenneth G.; Rice, Doris M.; and Cuscurida, Michael, to Texaco Development Corporation. Reaction injection molded polyurethane. 4,243,760, Cl. 521-176.000.

McDonald, Robert E.: *See*—
Yapp, William J.; and McDonald, Robert E., 4,243,705, Cl. 427-386.000.

McDonnell Douglas Corporation: *See*—
Esker, Andrew T., 4,243,187, Cl. 244-3.130.
Johnson, Robert E., 4,243,192, Cl. 244-215.000.

McGahee, Welbourne D., to Loop-A-Line, Inc. Method of disassembling hooks from hook retainers in recessed cups of fishing lures. 4,242,788, Cl. 29-426.600.

McGee, Thomas F.: *See*—
Lockwood, Harry F.; and McGee, Thomas F., 4,243,744, Cl. 430-325.000.

McGuire, John L.: *See*—
Capetola, Robert J.; and McGuire, John L., 4,243,673, Cl. 424-275.000.

McKelvy, Marvin D.: *See*—
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McKendrick, Lorne J., to Parts Handling, Inc. Fluid control valve. 4,243,060, Cl. 137-625.690.

McKenney, James L., to Vapor Corporation. Fluid heating system with storage of electric heat. 4,243,871, Cl. 219-326.000.

McKeown, William L.: *See*—
Carlock, Gaylord W.; McKeown, William L.; Goodman, James R.; and Skrodzki, Chester, 4,243,358, Cl. 416-114.000.

McMullan, Robert G., to SCM (Canada) Limited. Consumable package with collapsible handle. 4,243,336, Cl. 401-6.000.

McMullen, David W.: *See*—
McMullen, Susan L.; and McMullen, David W., 4,242,767, Cl. 5-465.000.

McMullen, Susan L.; and McMullen, David W. Play pillows. 4,242,767, Cl. 5-465.000.

McNeil, John C. Light box. 4,242,821, Cl. 40-571.000.

McNeil Laboratories, Incorporated: *See*—
Rasmussen, Chris R., 4,243,667, Cl. 424-251.000.
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., to Clow Corporation. Composite pipe. 4,243,075, Cl. 138-174.000.
McShane, Lawrence J.: *See*—
Cooper, Robin D. G.; Koppel, Gary A.; and McShane, Lawrence J., 4,243,587, Cl. 260-245.400.
McShirley, Robert C.: *See*—
Randoll, Ivan H.; and McShirley, Robert C., 4,242,812, Cl. 434-263.000.
McSparran, Joseph F., to RCA Corporation. Circuit board guide and ground connector. 4,243,283, Cl. 339-14.00R.
McSwain, Edward D. Temperature regulated wall ventilator construction. 4,243,175, Cl. 236-49.000.
McWilliams, Daniel N.: *See*—
Kliesch, Howard C.; McWilliams, Daniel N.; Pratt, Roy E.; and Schmude, Donald H., 4,243,630, Cl. 422-62.000.
Mead Corporation, The: *See*—
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Mead Johnson & Company: *See*—
Morrow, Duane F.; and Matier, William L., 4,243,681, Cl. 424-330.000.
Mechanization Systems Company: *See*—
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Meckel, Lothar: *See*—
Gliemeroth, Georg; Meckel, Lothar; and Heinemann, Peter, 4,243,299, Cl. 350-96.340.
Mediscan, Inc.: *See*—
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Medtronic, Inc.: *See*—
Ware, Lyle A., 4,243,042, Cl. 128-419.00P.
Meeks, Thomas; and Rhoades, Craig A. Downhole steam apparatus. 4,243,098, Cl. 166-59.000.
Meise, William H., to RCA Corporation. Signal integrator with time constant controlled by differentiating feedback. 4,243,918, Cl. 315-389.000.
Melhorn, Barry J.; and Krulikowski, Alex, to Borg-Warner Corporation. Transmission mechanism. 4,242,924, Cl. 74-759.000.
Menzi, Ulrich. Variable speed transmission of the friction-drive type. 4,242,919, Cl. 74-198.000.
Merck Patent Gesellschaft mit beschrankter Haftung: *See*—
Gericke, Rolf; Rogalski, Werner; Bergmann, Rolf; Hameister, Walter; and Wahlig, Helmut, 4,243,810, Cl. 546-295.000.
Merenyi, Miklos; Huszar, Laszlo; and Hidvegi, Janos, to Vizugyi Tervezo Vallalat. Metal water tower. 4,242,850, Cl. 52-745.000.
Merger, Franz; and Nestler, Gerhard, to BASF Aktiengesellschaft. Preparation of methylene-bis(4-phenylcarbamic acid esters). 4,243,815, Cl. 560-25.000.
Merriam, Charles N.: *See*—
Kaufman, Lawrence G.; and Merriam, Charles N., 4,243,767, Cl. 525-102.000.
Messenger, Edward T.; Mather, Douglas E.; and Phillips, Brinley M., to Albright & Wilson Ltd. Concentrated aqueous surfactant compositions. 4,243,549, Cl. 252-355.000.
Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See*—
Schwarz, Alois; Mautz, Karlheinz; and Stephan, Michael, 4,243,359, Cl. 416-138.000.
Methode Electronics, Inc.: *See*—
Brown, Vincent B.; Kozel, Charles A.; and Scheitz, John T., 4,243,286, Cl. 339-97.00R.
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Meyers, William G. Safety supporting devices for rearwardly tiltable vehicular cargo boxes. 4,243,267, Cl. 298-17.00B.
Mezrich, Reuben S.; and Stewart, Wilber C., to RCA Corporation. Acoustic variable focal length lens assembly. 4,242,913, Cl. 73-626.000.
Michael, Kenneth R.: *See*—
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Micro & Precision Mouldings (Cheltenham Limited): *See*—
James, Michael J., 4,243,369, Cl. 425-451.200.
Micro Technology Laboratory Co., Ltd.: *See*—
Mishima, Matsuo, 4,243,903, Cl. 310-154.000.
Microseal Plastics Corporation: *See*—
Swartz, Jeffrey L., 4,243,449, Cl. 156-82.000.
Midland-Ross Corporation: *See*—
DePenti, Kenneth L., 4,243,149, Cl. 213-62.00A.
Midwest Cardiovascular Institute Foundation: *See*—
Schwarzmann, Frank, 4,243,883, Cl. 250-343.000.
Mier, Thomas P. Solar panel and panel assembly. 4,243,020, Cl. 126-444.000.
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Hirano, Shigeo, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,243,739, Cl. 430-266.000.
Miki, Tetsuya: *See*—
Nosu, Kiyoshi; Ishio, Hideki; and Miki, Tetsuya, 4,244,045, Cl. 370-3.000.
Mikkelson, Robert P.: *See*—
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Sadeh, Dora; and Hexter, Charles S., 4,243,749, Cl. 435-7.000.
Milkowski, Wolfgang; Budden, Renke; Funke, Siegfried; Huschens, Rolf; Liepmann, Hans-Gunther; Stuhmer, Werner; and Zeugner, Horst, to Kali-Chemie Aktiengesellschaft. Bendodiazocine derivatives and process of making the same. 4,243,585, Cl. 260-239.0BD.
Miller, Bruce J.; Gadonas, Gus C.; and Donofrio, Frank C. Isolator/-switching assembly for data processing terminal. 4,243,890, Cl. 250-551.000.
Miller, Franklyn D.: *See*—
Muller, Werner C.; and Miller, Franklyn D., 4,243,750, Cl. 435-162.000.
Miller, Frederick A.: *See*—
Keskkula, Henno; and Miller, Frederick A., 4,243,765, Cl. 525-86.000.
Miller, George A.: *See*—
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,243,403, Cl. 71-67.000.
Miller, James H.: *See*—
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Miller-Johannisberg Druckmaschinen GmbH: *See*—
Van den Bergh, Marc F. S. M., 4,243,215, Cl. 493-422.000.
Mills, Harold E., to Occidental Chemical Company. Metallic ion removal from phosphoric acid. 4,243,643, Cl. 423-319.000.
Minagawa, Motonobu; Akutsu, Mitsuo; Fujiwara, Hiroshi; and Kashiki, Masayuki, to Maruzen Oil Co., Ltd. Stabilized polypropylene composition. 4,243,581, Cl. 260-45.85S.
Mine, Katsutoshi, to Toray Silicone Company, Ltd. Electrical insulating compositions containing zinc oxide and an organosilicon compound containing at least one silicon-hydrogen bond. 4,243,542, Cl. 260-375.00B.
Minneapolis Electric Steel Castings Company: *See*—
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Minnesota Mining and Manufacturing Company: *See*—
Chang, Robert W. H., 4,243,658, Cl. 424-52.000.
Koshar, Robert J., 4,243,783, Cl. 526-225.000.
Simpson, Jon H., 4,243,768, Cl. 525-127.000.
White, James L.; and Berg, James G., 4,243,794, Cl. 528-112.000.
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Ishihara, Eisuke; Yonehara, Hiroshi; Akasaki, Katsuyuki; Minowa, Masao; and Kobayashi, Katsumi, 4,243,661, Cl. 424-117.000.
Mion, Louis: *See*—
Pascal, Robert; Lasperas nee Marnier, Monique; Rousset, Alain; Commeyras, Auguste; Taillades, Jacques; and Mion, Louis, 4,243,814, Cl. 548-344.000.
Miquel, Jean: *See*—
Martino, Germain; and Miquel, Jean, 4,243,516, Cl. 208-139.000.
Miranti, Joseph P., Jr.: *See*—
Richmond, Kenneth D.; Miranti, Joseph P., Jr.; and Henderson, Dewey D., 4,243,452, Cl. 156-138.000.
Misawa, Akira; and Numata, Tatsuo, to Pioneer Electronic Corporation. Tuner with phase locked loop synthesizer. 4,244,055, Cl. 455-174.000.
Mishima, Matsuo, to Micro Technology Laboratory Co., Ltd. Permanent magnet stator for a DC dynamo electric machine using blocking magnets. 4,243,903, Cl. 310-154.000.
Mitchell, Daniel M., to Rockwell International Corporation. Sine-wave static converter. 4,244,016, Cl. 363-98.000.
Mitchell, Phillip E. Bowl and lid dispenser. 4,243,153, Cl. 221-34.000.
Mitooka, Kenji: *See*—
Mayumi, Masakatsu; Mitooka, Kenji; and Fujiwara, Sigeharu, 4,243,457, Cl. 156-245.000.
Mitsche, Roy T.; and Pope, George N., to UOP Inc. Reforming process. 4,243,515, Cl. 208-138.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Fujishima, Kazuyasu; Yamada, Michihiro; and Nagasawa, Kouichi, 4,243,897, Cl. 307-221.00D.
Kii, Masami, 4,243,860, Cl. 200-148.00R.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Isogai, Nobuo; Okawa, Takashi; and Takeda, Takako, 4,243,599, Cl. 260-348.250.
Mitsubishi Paper Mills, Ltd.: *See*—
Kosaka, Takao; and Tahara, Yukio, 4,243,716, Cl. 428-327.000.
Mitsui Coke Co., Ltd.: *See*—
Sugimura, Hidehiko; and Koba, Keichiro, 4,243,488, Cl. 201-6.000.
Mitsui Petrochemical Industries Ltd.: *See*—
Shiraki, Shigemi; and Yamamoto, Ryoichi, 4,243,636, Cl. 422-225.000.
Miura, Atsushi: *See*—
Tsuzuki, Akira; and Miura, Atsushi, 4,243,490, Cl. 202-241.000.
Miyake, Hidekazu: *See*—
Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,243,812, Cl. 548-248.000.
Miyakoshi, Isamu; Ito, Kenji; Azuma, Hideo; Kitakaze, Fukuzo; Tomotaki, Takamichi; and Takehara, Yasuo, to Hankyu Zouki Kogyo Kabushiki Kaisha. Speed controller for the rolling cylindrical articles. 4,243,132, Cl. 193-40.000.

Miyamoto, Koichi: *See*—
Tohyama, Yoshikuni; Kimura, Yoshimasa; Ishida, Masato; and Miyamoto, Koichi, 4,243,311, Cl. 355-8.000.

Mizobe, Tsugio: *See*—
Komeiji, Shigeki; Futamura, Yoshisumi; Mizobe, Tsugio; Okayama, Morio; and Iwasaki, Isao, 4,242,888, Cl. 64-21.000.

Mizushima, Eiji: *See*—
Ohsato, Nobuyoshi; Tanaka, Keihachiro; and Mizushima, Eiji, 4,243,400, Cl. 65-16.000.

Moacanin, Jovan: *See*—
Frosch, Robert A. Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Moacanin, Jovan; Gupta, Amitava; and Hong, Su-don, 4,243,327, Cl. 356-432.000.

Mobay Chemical Corporation: *See*—
Burge, Russell W., 4,243,617, Cl. 264-39.000.
Burge, Russell W., 4,243,625, Cl. 264-120.000.
Haas, James L., 4,243,759, Cl. 521-167.000.

Mobil Oil Corporation: *See*—
Farcasiu, Malvina; and Brandes, Susan D., 4,243,539, Cl. 252-52.00R.
Kerr, George T.; Plank, Charles J.; and Rosinski, Edward J., 4,243,828, Cl. 585-467.000.

Moeller, Chris R.; and Slanina, George L. Method and apparatus for control of air flow to a plurality of rooms. 4,243,174, Cl. 236-46.00R.

Moerel, Claude L. E.: *See*—
Bourdauducq, Paul M. C.; Brouard, Claude M. H. E.; Moerel, Claude L. E.; and Stiot, Jean-Pierre H., 4,243,606, Cl. 260-465.00D.

Mohlenkamp, Marvin J., Jr; and Hiler, George D., to Procter & Gamble Company, The. Sodium-free salt substitute. 4,243,691, Cl. 426-649.000.

Mohring, Edgar P.; and Muller, Hanns P., to Bayer Aktiengesellschaft. Process for the production of reaction products using aqueous formose which has been prepared with the use of a lead catalyst which lead catalyst has been removed from the formose product by cathodic electrochemical deposition. 4,243,758, Cl. 521-158.000.

Molina, Orlando G., to Rockwell International Corporation. Composition and method for removing water and aqueous leak tracer solutions from fuel tanks. 4,243,547, Cl. 252-194.000.

Molins Machine Company, Inc.: *See*—
Coburn, Robert E., 4,242,934, Cl. 83-100.000.

Molleron, Claude A.: *See*—
Brouard, Germain G.; and Molleron, Claude A., 4,244,046, Cl. 370-62.000.

Mona Industries: *See*—
O'Lenick, Anthony J., Jr.; and Mayhew, Raymond L., 4,243,602, Cl. 260-403.000.

Monash University: *See*—
Cherry, Edward M., 4,243,943, Cl. 330-100.000.

Mondragon Sorribes, Ramon. Container for the individual transportation of plants. 4,242,835, Cl. 47-84.000.

Mono Pumps (Africa) (Proprietary) Limited: *See*—
Payne, Stanley A. E., 4,242,887, Cl. 64-4.000.

Monsanto Company: *See*—
Brannigan, Lawrence H.; Franz, John E.; and Schafer, David E., 4,243,406, Cl. 71-88.000.
Gabbard, James D., 4,243,571, Cl. 260-31.80H.
Magin, Ralph W., 4,243,591, Cl. 260-326.220.
Spilburg, Curtis A.; and Schuck, James M., 4,243,582, Cl. 260-112.00R.
Williamson, Alex N.; and Tremont, Samuel J., 4,243,825, Cl. 585-428.000.

Montedison S.p.A.: *See*—
Palvarini, Attilio; Lorusso, Simone; and Longoni, Angelo, 4,243,703, Cl. 427-276.000.

Moody, Jack M., to Cranston Machinery Co., Inc. Door sizing machine. 4,243,084, Cl. 144-39.000.

Moog Recreational Products, Inc.: *See*—
Replogle, Douglas L., 4,243,244, Cl. 280-605.000.

Mookherjee, Braja D.: *See*—
Vock, Manfred H.; Giacino, Christopher; Hruza, Anne; Withycombe, Donald A.; Mookherjee, Braja D.; and Mussinan, Cynthia J., 4,243,688, Cl. 426-535.000.
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,243,823, Cl. 568-824.000.

Moore, Eugene R.; and Kowalczyk, John S., to Dow Chemical Company, The. Continuous method for determining residual vinyl chloride content in a boiling aqueous polymer dispersion. 4,243,491, Cl. 203-2.000.

Moore, Henry J., Jr.; and Deneau, Myron E., to Mor-Flo Industries, Inc. Hot water tank supporting legs. 4,243,194, Cl. 248-188.100.

Moore, Michael R. P. Bird nesting box formed of a disposable storage container. 4,242,983, Cl. 119-23.000.

Moore, Randall H.: *See*—
McCool, John M.; Widrow, Bernard; Hearn, Robert H.; Zeidler, James R.; Chabries, Douglas M.; and Moore, Randall H., 4,243,935, Cl. 324-77.00R.

Mor-Flo Industries, Inc.: *See*—
Moore, Henry J., Jr.; and Deneau, Myron E., 4,243,194, Cl. 248-188.100.

Moredock, Jerry L.; Wagner, James E.; and Hyder, Jonnie O., to Martin Marietta Corporation. Chevron grooved decoupling obturator. 4,242,961, Cl. 102-93.000.

Morgan Adhesives Company: *See*—
McClintock, Jack M., 4,243,453, Cl. 156-152.000.

Morgan Construction Company: *See*—
Wykes, Robert D.; and Woodrow, Harold E., 4,242,892, Cl. 72-66.000.

Mori, Haruo: *See*—
Ueda, Jun; Mori, Haruo; Hagimura, Kazuo; and Kato, Kotaro, 4,244,000, Cl. 357-39.000.

Mori, Masaaki; Ogawa, Tamotu; and Takai, Norihira, to Toshiba Ceramics Co., Ltd. β'-Sialon sintered body and a method for manufacturing the same. 4,243,621, Cl. 264-65.000.

Morimoto, Syogo: *See*—
Sakai, Junji; Morimoto, Syogo; and Shimaguchi, Takashi, 4,243,420, Cl. 106-38.300.

Morisi, Franco: *See*—
Marconi, Walter; Pittalis, Francesco; Bartoli, Francesco; and Morisi, Franco, 4,243,776, Cl. 525-420.000.

Moritani, Nakanobu: *See*—
Samejima, Toshihide; Moritani, Nakanobu; Oda, Hajime; and Fujita, Masanori, 4,244,042, Cl. 368-73.000.

Moriyama, Aritsune; and Kida, Kunio, to Sanko Air Plant, Ltd. Thermo-pneumatic unit and apparatus for thermal treatment of travelling flat materials. 4,242,811, Cl. 34-150.000.

Morris, Kenneth J., to Smiths Industries. Workpiece drive wheel for a grinding machine. 4,242,840, Cl. 51-236.000.

Morrow, Duane F.; and Matier, William L., to Mead Johnson & Company. Alkylthiophenoxypropanolamines and pharmaceutical compositions and uses thereof. 4,243,681, Cl. 424-330.000.

Morton, Douglas R., Jr., to Upjohn Company, The. 9,11-Dideoxy-10-oxa-TXB compounds. 4,243,592, Cl. 260-340.700.

Morton, Kenneth I., to Brunswick Corporation. Camouflage. 4,243,709, Cl. 428-195.000.

Mosley, Darrell T.: *See*—
Winsett, Walter P., 4,242,768, Cl. 9-1.200.

Motonami, Masanao; Yasumatsu, Jun; and Tsujiuchi, Yoshio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai-Rika-Denki Seisakusho. Locking device for seatbelt systems. 4,243,185, Cl. 242-107.200.

Motorola, Inc.: *See*—
Daniel, Sam M.; and Peterson, Kenneth M., 4,243,955, Cl. 332-37.00D.
Eckert, Kim, 4,243,945, Cl. 330-253.000.
Seelbach, Walter C., 4,243,898, Cl. 307-310.000.
Zdunek, Kenneth J., 4,243,941, Cl. 329-50.000.

Motosacoche S.A.: *See*—
Curetti, Ennio G.; and Collombin, Andre M., 4,243,620, Cl. 264-45.100.

Mueller, Herbert; Huchler, Otto H.; and Hoffmann, Herwig, to BASF Aktiengesellschaft. Polymerization of tetrahydrofuran. 4,243,799, Cl. 528-409.000.

Mui, Wing F., to GTE Automatic Electric Laboratories Incorporated. Interlock control of asynchronous data transmission between a host processor and a plurality of microprocessors through a common buffer. 4,244,018, Cl. 364-200.000.

Mulcahy, John J., to Gloucester Engineering Co., Inc. Control of tubular film size. 4,243,363, Cl. 425-140.000.

Muller, Hanns P.: *See*—
Mohring, Edgar P.; and Muller, Hanns P., 4,243,758, Cl. 521-158.000.

Muller, Helmut; and Schweizer, Heinz, to Voith Transmit GmbH. Coupling for torque transmission. 4,242,889, Cl. 64-30.00R.

Muller, Klaus: *See*—
Kuttler, Otto; and Muller, Klaus, 4,243,086, Cl. 411-174.000.

Muller, Rolf, to Mead Corporation, The. Wrapper for a plurality of articles arranged in rows. 4,243,143, Cl. 206-429.000.

Muller, Werner C.; and Miller, Franklyn D., to National Distillers and Chemical Corp. Process for the hydrolysis of starch and the continuous fermentation of the sugars obtained therefrom to provide ethanol. 4,243,750, Cl. 435-162.000.

Mulloy, John M.: *See*—
Flynn, Patrick F.; Weber, Harold G.; and Mulloy, John M., 4,243,357, Cl. 415-215.000.

Multani, Jagir S.; and Sandhu, Jagtar S., to General Instrument Corporation. Microelectronic device and method for testing same. 4,243,937, Cl. 324-158.00T.

Multicore Solders Limited: *See*—
Arbib, Gordon F.; and Baranick, Mervin, 4,243,440, Cl. 148-23.000.

Multifastener Corporation: *See*—
Matthews, Horton; York, Kenneth V.; and Goodsmith, Dale H., 4,242,793, Cl. 29-798.000.

Murai, Bunjiro; and Matsumoto, Yasuji, to Toshiba Silicone Co. Ltd. Primer compositions for Si-H-olefin platinum catalyzed silicone compositions. 4,243,718, Cl. 428-411.000.

Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, to Kanebo Foods Ltd. Instant-cooking dry macaroni and like dry foods and a method of their manufacture. 4,243,690, Cl. 426-557.000.

Murakami, Sanpei: *See*—
Kokeguchi, Sadao; Takahashi, Hiroshi; Okada, Ken; and Murakami, Sanpei, 4,243,689, Cl. 426-557.000.

Murao, Mikio: *See*—
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Murata, Hideki: *See*—
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Murata, Katsuhiro: *See*—
Shiba, Hiroshi; and Murata, Katsuhiro, 4,243,455, Cl. 156-187.000.
Murtha, Timothy P.: *See*—
Drake, Charles A.; and Murtha, Timothy P., 4,243,610, Cl. 564-491.000.
Muscanell, Douglas W.: *See*—
Paris, Alfonso A., Jr.; Muscanell, Douglas W.; and Grutter, James H., 4,243,082, Cl. 144-133.00R.
Mussinan, Cynthia J.: *See*—
Vock, Manfred H.; Giacino, Christopher; Hruza, Anne; Withycombe, Donald A.; Mookherjee, Braja D.; and Mussinan, Cynthia J., 4,243,688, Cl. 426-535.000.
Myers, Donald C.; and Wilson, Phillip S., to General Electric Company. Filled thermoplastic resin compositions. 4,243,575, Cl. 260-37.0PC.
Myers, Franklin D.; and McKelvy, Marvin D., to A. B. Chance Company. Torque controlled clamp stick adapter. 4,242,930, Cl. 81-474.000.
Nachbur, Hermann; Hiestand, Armin; and Rohringer, Peter, to Ciba-Geigy Corporation. Compositions for fireproofing polyester fiber materials with substituted sulphurylamides. 4,243,418, Cl. 106-18.220.
Nagai, Kiyoshi, to Wakoh Corporation. Filament support assembly for display device. 4,243,910, Cl. 313-522.000.
Nagakura, Saburo: *See*—
Yoshida, Zen-ichi; Yoneda, Shigeo; Murata, Hideki; Yasuda, Yutaka; and Nagakura, Saburo, 4,243,601, Cl. 260-396.00N.
Nagarajan, Arunachala: *See*—
Barile, Conrad A.; Goth, Goerge R.; Makris, James S.; Nagarajan, Arunachala; and Raheja, Raj K., 4,243,435, Cl. 148-1.500.
Nagasawa, Kouichi: *See*—
Fujishima, Kazuyasu; Yamada, Michihiro; and Nagasawa, Kouichi, 4,243,897, Cl. 307-221.00D.
Nagata, Hideo: *See*—
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Nagatsuma, Kazuyuki: *See*—
Takeuchi, Hiroshi; Ito, Yukio; Jyomura, Shigeru; Yamashita, Kunio; Nagatsuma, Kazuyuki; Ashida, Sakichi; and Ishii, Mitsuru, 4,243,541, Cl. 252-62.900.
Nagler, Robert T., to Lundy Electronics & Systems, Inc. Conductive laminate and method of producing the same. 4,243,460, Cl. 156-275.000.
Nagpal, Krishen L.: *See*—
Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., 4,243,822, Cl. 568-769.000.
Nakagawa, Akio: *See*—
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Nakagawa, Hirosi: *See*—
Kakumoto, Michio; Oe, Eizi; and Nakagawa, Hirosi, 4,243,932, Cl. 324-54.000.
Nakajima, Kazutsugu: *See*—
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Nakamoto, Soichi: *See*—
Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, 4,243,308, Cl. 354-60.00E.
Nakamura, Akira; and Oguri, Masato, to Toyota Jidosha Kogyo Kabushiki Kaisha. Booster utilizing fluid pressure. 4,242,943, Cl. 91-369.00A.
Nakamura, Kotaro; Adachi, Keiichi; and Ogawa, Akira, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 4,243,747, Cl. 430-551.000.
Nakamura, Yoichi: *See*—
Tsuda, Minoru; Nakamura, Yoichi; Nagata, Hideo; and Nakane, Hisashi, 4,243,740, Cl. 430-270.000.
Nakamura, Yoshikatsu: *See*—
Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, 4,243,414, Cl. 75-244.000.
Nakane, Hisashi: *See*—
Tsuda, Minoru; Nakamura, Yoichi; Nagata, Hideo; and Nakane, Hisashi, 4,243,740, Cl. 430-270.000.
Nakayama, Motohiro; and Nakajima, Kazutsugu, to Nippon Steel Corporation. Steel sheet having a zinc coating on one side. 4,243,730, Cl. 428-659.000.
Nakayama, Yasuaki, to Citizen Watch Co., Ltd. Watch movement construction. 4,243,329, Cl. 368-76.000.
Nalebuff, Donald J. Allergy test. 4,243,651, Cl. 424-1.000.
Narayan, Thirumurti: *See*—
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National Distillers and Chemical Corp.: *See*—
Fischer, Joseph; and Hoyt, John M., 4,243,576, Cl. 260-42.150.
McClain, Dorothee M., 4,243,762, Cl. 525-6.000.
Muller, Werner C.; and Miller, Franklyn D., 4,243,750, Cl. 435-162.000.
Pritchett, Ervin G., 4,243,769, Cl. 525-222.000.
National Element, Inc.: *See*—
Best, Lorne A., 4,243,872, Cl. 219-375.000.
National Nuclear Corp.: *See*—
Untermyer, Samuel, II, 4,243,886, Cl. 250-390.000.
National Research Development Corporation: *See*—
Challis, Lawrence J., 4,242,905, Cl. 73-15.00R.
Martin, Archer J. P.; and Hampson, Frank, 4,243,507, Cl. 204-301.000.
National Semiconductor Corporation: *See*—
Haines, Ralph W., 4,244,028, Cl. 364-712.000.
National Starch and Chemical Corporation: *See*—
Hernandez, Henry R.; Greif, Donald S.; Barna, Albert N.; and Thornton, Douglas S., 4,243,480, Cl. 162-141.000.
Tessler, Martin M., 4,243,479, Cl. 162-175.000.
National Steel Corporation: *See*—
Wilson, Walter A., 4,243,441, Cl. 148-128.000.
Natori, Kenji; and Masuoka, Fujio, to Tokyo Shibaura Electric Co., Ltd. Semiconductor device. 4,243,997, Cl. 357-23.000.
Naumann, Alfred W.; and Behan, Albert S., to Union Carbide Corporation. Production of improved molybdenum disulfide catalysts. 4,243,553, Cl. 252-439.000.
Naumann, Alfred W.; and Behan, Albert S., to Union Carbide Corporation. Molybdenum disulfide catalyst and the preparation thereof. 4,243,554, Cl. 252-439.000.
Nava, Pierluigi. Helmet with tiltable visor. 4,242,757, Cl. 2-10.000.
Nazarian, Artashes R.; Kremlev, Vyacheslav Y.; Kokin, Vilyam N.; Sladkov, Viktor I.; Venkov, Boris V.; and Lavrov, Vadim V. Integrated injection circuit. 4,243,895, Cl. 307-205.000.
Nazimek, Kenneth, to Exxon Research & Engineering Co. Voltage regulator for variant light intensity photovoltaic recharging of secondary batteries. 4,243,928, Cl. 320-2.000.
NCR Canada Ltd. - NCR Canada Ltee: *See*—
Mazumder, Ali T., 4,243,216, Cl. 271-263.000.
Vyas, Arvind C., 4,243,983, Cl. 340-674.000.
Ndebeka, Gilberte: *See*—
Boileau, Sylvie L.; Caubere, Paul J.; Ndebeka, Gilberte; Lecolier, Serge L.; and Raynal, Serge F., 4,243,787, Cl. 526-180.000.
Ned Strongin Associates, Inc.: *See*—
O'Shaughnessy, John F., 4,242,831, Cl. 46-251.000.
Neff, Robert K.: *See*—
Holt, Jan D.; and Neff, Robert K., 4,242,966, Cl. 105-182.00R.
Negishi, Takao; and Tomiita, Kazuo, to Toray Industries, Inc. Multifilament yarn having novel configuration and a method for producing the same. 4,242,862, Cl. 57-287.000.
Negosta, Edward W. Granular product dispenser. 4,243,158, Cl. 222-184.000.
Nekoosa Papers, Inc.: *See*—
Lodzinski, Fred P., 4,243,319, Cl. 356-73.000.
Nemecek, Ralph E.: *See*—
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Nemit, Jeffrey T.; Hockham, George A.; and Wolfson, Ronald I., to International Telephone and Telegraph Corporation. Integrated multiband array antenna. 4,243,990, Cl. 343-771.000.
Nemoto, Takayuki: *See*—
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.
Neptune Glenfield Limited: *See*—
Lambie, John W., 4,243,066, Cl. 137-202.000.
Nero, Leroy W., to RCA Corporation. Color picture tube magnetic shielding and degaussing structure. 4,243,913, Cl. 315-8.000.
Nestler, Gerhard: *See*—
Merger, Franz; and Nestler, Gerhard, 4,243,815, Cl. 560-25.000.
Neturen Company Ltd.: *See*—
Fukuhara, Tetsukazu, 4,243,447, Cl. 156-64.000.
Neumann, Gerhard M.; and Karelin, Jochen, to Delbag-Luftfilter GmbH. Method of mounting filter elements and mounting therefor. 4,243,486, Cl. 176-37.000.
Nevins, James L., Jr.: *See*—
Whitney, Daniel E.; and Nevins, James L., Jr., 4,243,923, Cl. 318-561.000.
Nevrela, James D.: *See*—
Rees, Herbert; and Nevrela, James D., 4,243,362, Cl. 425-130.000.
New, David M.: *See*—
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New England Log Homes, Inc.: *See*—
Paris, Alfonso A., Jr.; Muscanell, Douglas W.; and Grutter, James H., 4,243,082, Cl. 144-133.00R.
Newton, Alan B.: *See*—
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Nezuka, Minoru: *See*—
Suzuki, Takeshi; Murao, Mikio; Uchida, Masahiro; and Nezuka, Minoru, 4,243,382, Cl. 432-78.000.
NGK Insulators, Ltd.: *See*—
Higuchi, Noboru; and Futamura, Shoji, 4,243,370, Cl. 425-462.000.
Niagara Cutter Inc.: *See*—
Oaks, Ronald R., 4,242,927, Cl. 76-101.00A.
Nicolas, Edgard; and Bourgeois, Louis, to Solvay & Cie. Process for the electrolytic production of hydrogen in an alkaline. 4,243,497, Cl. 204-98.000.
Nicolaus, Frank G., to Bally Manufacturing Corporation. Anti-stringing device for a coin detecting device. 4,243,133, Cl. 194-9.00R.
Niederer, Edward, Jr.: *See*—
Ledford, James B.; and Niederer, Edward, Jr., 4,242,903, Cl. 72-413.000.
Nieman, John R., to Caterpillar Tractor Co. Method of making an insulated manifold with double cast walls. 4,243,093, Cl. 164-96.000.
Nietsche, Rainer: *See*—
Hillenkamp, Franz; Kaufmann, Raimund; Unsold, Eberhard; Nietsche, Rainer; Wechsung, Reiner; Vogt, Henning; Bank, Walter; and Aberle, Lothar, 4,243,887, Cl. 250-423.00P.

Nihon Atsuen Kogyo K.K.: *See*—
Yanagida, Kiyomi; Magusa, Harumi; and Takahashi, Akihiko, 4,243,438, Cl. 148-11.50A.
Nihon Kogyo Kabushiki Kaisha: *See*—
Sato, Haruki; and Kawasumi, Yoshio, 4,243,728, Cl. 428-570.000.
Niida, Hideo, to Tokyo Shibaura Electric Co., Ltd. Refrigerating apparatus. 4,242,880, Cl. 62-200.000.
Nikolaeva, Militina A.: *See*—
Kruglikov, Anatoly A.; Nikolaeva, Militina A.; Vasin, Jury P.; Itkis, Zolya Y.; Shirinkin, Vladimir A.; Zimina, Ida A.; Strupinsky, Vladimir A.; and Koposov, Valery V., 4,243,780, Cl. 525-518.000.
Nikolic, Cvetko: *See*—
Sherwood, William G.; Hodges, Donald R.; and Nikolic, Cvetko, 4,243,498, Cl. 204-112.000.
Niles, Paul D.: *See*—
Ellingson, Dennis L.; Niles, Paul D.; Normann, Richard W.; and Wilklow, Theodore L., 4,242,790, Cl. 29-879.000.
Ninomiya, Masakazu: *See*—
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,243,008, Cl. 123-425.000.
Nippon Electric Co., Ltd.: *See*—
Nomura, Hidenori; Honmo, Hiroshi; and Matsushita, Shigeo, 4,243,398, Cl. 65-2.000.
Sato, Susumu; and Tsunemitsu, Hideo, 4,244,002, Cl. 357-68.000.
Nippon Graphite Industries, Ltd.: *See*—
Shiba, Hiroshi; and Murata, Katsuhiro, 4,243,455, Cl. 156-187.000.
Nippon Hoso Kyokai: *See*—
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.
Nippon Kogaku K.K.: *See*—
Okuda, Minoru; and Ito, Mikio, 4,243,321, Cl. 356-135.000.
Nippon Piston Ring Co., Ltd.: *See*—
Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, 4,243,414, Cl. 75-244.000.
Nippon Sheet Glass Co., Ltd.: *See*—
Kume, Makoto, 4,243,421, Cl. 106-50.000.
Ohsato, Nobuyoshi; Tanaka, Keihachiro; and Mizushima, Eiji, 4,243,400, Cl. 65-16.000.
Nippon Soken, Inc.: *See*—
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Inoue, Tokuta; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,242,997, Cl. 123-568.000.
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,243,008, Cl. 123-425.000.
Nippon Steel Corporation: *See*—
Nakayama, Motohiro; and Nakajima, Kazutsugu, 4,243,730, Cl. 428-659.000.
Nippon Telegraph and Telephone Public Corporation: *See*—
Nosu, Kiyoshi; Ishio, Hideki; and Miki, Tetsuya, 4,244,045, Cl. 370-3.000.
Ueda, Jun; Mori, Haruo; Hagimura, Kazuo; and Kato, Kotaro, 4,244,000, Cl. 357-39.000.
Nippon Zeon Co. Ltd.: *See*—
Inagami, Masaaki; and Fukushima, Hiroshi, 4,243,774, Cl. 525-405.000.
Nippondenso Co., Ltd.: *See*—
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,243,008, Cl. 123-425.000.
Nishikawa, Kazuyoshi; and Uno, Makoto, to Toyota Jidosha Kogyo Kabushiki Kaisha. Lubrication in power transmission unit. 4,242,923, Cl. 74-700.000.
Nishimatsu, Akira: *See*—
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Inoue, Tokuta; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,242,997, Cl. 123-568.000.
Nishimura, Hiroyuki: *See*—
Shioya, Toshio; Nishimura, Hiroyuki; and Umemoto, Takashi, 4,242,998, Cl. 123-568.000.
Nishino, Sakae; Sakakibara, Takao; and Okazaki, Haruhiko, to Dai Nippon Toryo Co., Ltd. Aqueous dispersion type coating composition. 4,243,565, Cl. 260-22.0CQ.
Nishiyama, Shigeru: *See*—
Amemori, Hiroyuki; and Nishiyama, Shigeru, 4,242,916, Cl. 73-861.830.
Nishiyama, Yukio: *See*—
Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, 4,243,492, Cl. 203-8.000.
Nissan Motor Company, Limited: *See*—
Hisatomi, Takashi, 4,243,005, Cl. 123-638.000.
Kataoka, Shunpei, 4,243,247, Cl. 280-700.000.
Kawamura, Yoshihisa; and Saito, Masaaki, 4,242,992, Cl. 123-491.000.
Toda, Tadayoshi; Omote, Kazuaki; and Imai, Mamoru, 4,243,196, Cl. 248-475.00R.
Nissen, Dietmar: *See*—
Marx, Matthias; Nissen, Dietmar; and Jarre, Wolfgang, 4,243,755, Cl. 521-99.000.
Nissen, Walter D., to Kimberly-Clark Corporation. Automatic bag loader. 4,242,854, Cl. 53-529.000.
Nitto Electric Industrial Co., Ltd.: *See*—
Hori, Yutaka; Takahashi, Hidekazu; Sunakawa, Makoto; Ijichi, Ichiro; and Kamei, Kiyohiro, 4,243,462, Cl. 156-310.000.
Niven, William A.; Shikany, S. David; and Shira, Michael L., to United States of America, Energy. Multiple stage miniature stepping motor. 4,243,900, Cl. 310-49.00R.
Nixon, Ralph D., to English Electric Valve Company Limited. Display arrangements. 4,243,986, Cl. 340-756.000.
Noguchi, Masaru, to Fuji Photo Film Co., Ltd. Method and apparatus for generating synchronizing signal for a beam scanner. 4,243,294, Cl. 350-6.800.
Nolte, Ewald, to Tuxhorn KG. Bypass valve for pumps, heating systems and the like. 4,243,064, Cl. 137-117.000.
Noltes, Jan G.; Jastrzebski, J. T. B. H.; and van Koten, Gerard, to Borg-Warner Corporation. Aliphatic metal cluster compounds. 4,243,604, Cl. 260-430.000.
Noltes, Jan G.; van Koten, Gerard; and Cohen, Murray S., to Borg-Warner Corporation. Zero-valent rhodium catalyst hydrogenation. 4,243,824, Cl. 585-259.000.
Nomura, Hidenori; Honmo, Hiroshi; and Matsushita, Shigeo, to Nippon Electric Co., Ltd. Method of producing dielectric diffraction gratings or dielectric multilayer interference filters. 4,243,398, Cl. 65-2.000.
Noomi, Makoto: *See*—
Fujikura, Nobuyuki; Noomi, Makoto; and Ihara, Hirokazu, 4,244,051, Cl. 375-17.000.
Nordh, Sven B. L. Method and composition for the preservation of plants. 4,243,693, Cl. 427-4.000.
Norlin Industries, Inc.: *See*—
Swain, Richard S., 4,242,936, Cl. 84-1.030.
Normann, Richard W.: *See*—
Ellingson, Dennis L.; Niles, Paul D.; Normann, Richard W.; and Wilklow, Theodore L., 4,242,790, Cl. 29-879.000.
North American Philips Corporation: *See*—
Delfino, Michaelangelo; Gentile, Philip S.; Loiacono, Gabriel M.; and Smith, Wallace A., 4,243,642, Cl. 423-277.000.
North Atlantic Industries, Inc.: *See*—
Wassermann, Carl I., 4,242,955, Cl. 101-93.290.
Northampton Sheet Metal Fabrications Ltd.: *See*—
Scarrott, Brian D., 4,242,904, Cl. 72-461.000.
Northern Telecom Limited: *See*—
Gibb, William D., 4,243,842, Cl. 179-18.0FA.
Gordon, Kevin S., 4,243,320, Cl. 356-73.100.
Lenaerts, George V.; Perks, Roger; and Dudley, Phillip J., 4,243,846, Cl. 179-90.00K.
Norton, Terry L.: *See*—
Suttles, James M.; Norton, Terry L.; Hart, Joseph P.; and Jordan, Thomas C., III, 4,242,970, Cl. 108-159.000.
Nosu, Kiyoshi; Ishio, Hideki; and Miki, Tetsuya, to Nippon Telegraph and Telephone Public Corporation. Optical multiplexer and demultiplexer. 4,244,045, Cl. 370-3.000.
Novak, Lajos: *See*—
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefko, Bela; and Kis-Tamas, Attila, 4,243,660, Cl. 424-84.000.
Novak, Walter T.: *See*—
Hansen, Magnus B.; and Novak, Walter T., 4,244,012, Cl. 362-216.000.
Numata, Tatsuo: *See*—
Misawa, Akira; and Numata, Tatsuo, 4,244,055, Cl. 455-174.000.
N.V. Bekaert S.A.: *See*—
Vanassche, Roger; and Verbauwhede, Germain, 4,243,714, Cl. 428-258.000.
N.V. Optische Industrie "De Oude Delft": *See*—
van Geest, Lambertus K.; and Houtkamp, Johannes J., 4,243,905, Cl. 313-102.000.
Oak Industries Inc.: *See*—
Larson, Willis A., 4,243,852, Cl. 200-5.00A.
Oaks, Ronald R., to Niagara Cutter Inc. Method of making a cutting tool. 4,242,927, Cl. 76-101.00A.
Oblas, Daniel W.: *See*—
Brecher, Charles; and Oblas, Daniel W., 4,243,909, Cl. 313-487.000.
Occidental Chemical Company: *See*—
Mills, Harold E., 4,243,643, Cl. 423-319.000.
Occidental Oil Shale, Inc.: *See*—
Cha, Chang Y., 4,243,100, Cl. 166-259.000.
Occidental Petroleum Company: *See*—
Bradford, James L.; and Ore, Fernando, 4,243,637, Cl. 423-10.000.
Occidental Petroleum Corp.: *See*—
Green, Norman W., 4,243,489, Cl. 201-12.000.
Oda, Hajime: *See*—
Samejima, Toshihide; Moritani, Nakanobu; Oda, Hajime; and Fujita, Masanori, 4,244,042, Cl. 368-73.000.
Oda, Nobuteru: *See*—
Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, 4,243,492, Cl. 203-8.000.
Odin, Eugene: *See*—
Demler, Walter R.; Nagpal, Krishen L.; Dollard, Richard M.; Odin, Eugene; and Donahue, Donald T., 4,243,822, Cl. 568-769.000.
Oe, Eizi: *See*—
Kakumoto, Michio; Oe, Eizi; and Nakagawa, Hirosi, 4,243,932, Cl. 324-54.000.
Offerman, Karl B.: *See*—
Peter, Jack; Offerman, Karl B.; Brown, Larry D.; and Stone, Derek J., 4,243,186, Cl. 242-195.000.

Officine Meccaniche Danieli & C. SpA: *See*—
Famos, Steno; Fasano, Fulvio; and Bassarutti, Alfredo, 4,242,933, Cl. 83-37.000.
Ogawa, Akira: *See*—
Nakamura, Kotaro; Adachi, Keiichi; and Ogawa, Akira, 4,243,747, Cl. 430-551.000.
Ogawa, Masaya, to Minolta Camera Kabushiki Kaisha. Electrophotographic copying apparatus. 4,243,312, Cl. 355-8.000.
Ogawa, Tamotu: *See*—
Mori, Masaaki; Ogawa, Tamotu; and Takai, Norihira, 4,243,621, Cl. 264-65.000.
Oguri, Masato: *See*—
Nakamura, Akira; and Oguri, Masato, 4,242,943, Cl. 91-369.00A.
Ohgi, George Y., to Boeing Company, The. Temperature stabilized linkage. 4,243,189, Cl. 244-75.00R.
Ohlinger, Manfred: *See*—
Hammon, Fritz; Ohlinger, Manfred; and Hartmann, Job-Werner, 4,243,059, Cl. 137-2.000.
Ohno, Shigeru: *See*—
Kobayashi, Hajime; Koumura, Noboru; and Ohno, Shigeru, 4,243,994, Cl. 346-140.00R.
Ohsato, Nobuyoshi; Tanaka, Keihachiro; and Mizushima, Eiji, to Nippon Sheet Glass Co., Ltd. Apparatus for producing fibers from heat-softening materials. 4,243,400, Cl. 65-16.000.
Ohwada, Hisatoshi: *See*—
Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,243,633, Cl. 422-129.000.
Oil Extractors, Inc.: *See*—
Groff, Henry C., 4,243,361, Cl. 417-554.000.
Oil Recovery Systems, Inc.: *See*—
Strauss, William A., 4,243,529, Cl. 210-109.000.
Oishi, Kiyohiko: *See*—
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Inoue, Tokuta; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,242,997, Cl. 123-568.000.
Okada, Isamu: *See*—
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.
Okada, Ken: *See*—
Kokeguchi, Sadao; Takahashi, Hiroshi; Okada, Ken; and Murakami, Sanpei, 4,243,689, Cl. 426-557.000.
Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,243,690, Cl. 426-557.000.
Okamoto, Haruo: *See*—
Takamizawa, Minoru; Okamoto, Haruo; Umemura, Mitsuo; and Kooya, Kazuo, 4,243,607, Cl. 570-257.000.
Okawa, Masahisa: *See*—
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Okawa, Masahisa, 4,243,786, Cl. 526-137.000.
Okawa, Takashi: *See*—
Isogai, Nobuo; Okawa, Takashi; and Takeda, Takako, 4,243,599, Cl. 260-348.250.
Okayama, Morio: *See*—
Komeiji, Shigeki; Futamura, Yoshisumi; Mizobe, Tsugio; Okayama, Morio; and Iwasaki, Isao, 4,242,888, Cl. 64-21.000.
Okazaki, Haruhiko: *See*—
Nishino, Sakae; Sakakibara, Takao; and Okazaki, Haruhiko, 4,243,565, Cl. 260-22.0CQ.
Oki Electric Industry Co., Ltd.: *See*—
Onoda, Fumio; and Kakizoe, Yutaka, 4,243,924, Cl. 318-573.000.
Ueda, Jun; Mori, Haruo; Hagimura, Kazuo; and Kato, Kotaro, 4,244,000, Cl. 357-39.000.
Okuda, Minoru; and Ito, Mikio, to Nippon Kogaku K.K. Handy refractometer. 4,243,321, Cl. 356-135.000.
Okumura, Takeo; Ishida, Atsuo; and Hayashi, Shizuo, to Kao Soap Co., Ltd. Hair cosmetic. 4,243,657, Cl. 424-47.000.
O'Lenick, Anthony J., Jr.; and Mayhew, Raymond L., to Mona Industries. Novel quaternary compounds. 4,243,602, Cl. 260-403.000.
Olinkraft, Inc.: *See*—
Wilson, Jerry F., 4,243,138, Cl. 206-188.000.
Oliver, Douglas E. Apparatus for programming a PROM by propagating data words from an address bus to the PROM data terminals. 4,244,032, Cl. 364-900.000.
Olsen, C. Eric, to Auburn Enterprises, Inc. Instrument for taking tissue specimens. 4,243,047, Cl. 128-751.000.
Olsen, Robert C., to Illinois Tool Works Inc. Nestable and stackable transplanting system. 4,242,834, Cl. 47-73.000.
Olson, Daniel R.: *See*—
Schroeter, Siegfried H.; and Olson, Daniel R., 4,243,720, Cl. 428-412.000.
Olson, Gary L.; and Saucy, Gabriel, to Hoffmann-La Roche Inc. Synthesis of vitamin E. 4,243,598, Cl. 260-348.110.
Olsson, Mark S. Waterproof sport watch. 4,244,044, Cl. 368-291.000.
Olympus Optical Co., Ltd.: *See*—
Satoh, Ken, 4,244,009, Cl. 360-71.000.
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Method for controlling ignition timing of internal combustion engine. 4,243,008, Cl. 123-425.000.
Omote, Kazuaki: *See*—
Toda, Tadayoshi; Omote, Kazuaki; and Imai, Mamoru, 4,243,196, Cl. 248-475.00R.
O'Neill, Charles F., to Burroughs Corporation. Method for liquid phase epitaxy multiple dipping of wafers for bubble film growth. 4,243,472, Cl. 156-624.000.
Onishi, Sigeru, to Toyota Jidosha Kogyo Kabushiki Kaisha. 2-Cycle engine of an active thermoatmosphere combustion. 4,242,993, Cl. 123-59.00B.
Onoda, Fumio; and Kakizoe, Yutaka, to Oki Electric Industry Co., Ltd. System for interpolating an arc for a numerical control system. 4,243,924, Cl. 318-573.000.
Ontario Research Foundation: *See*—
White, Robert C., 4,242,759, Cl. 3-1.910.
Ore, Fernando: *See*—
Bradford, James L.; and Ore, Fernando, 4,243,637, Cl. 423-10.000.
Orion Industries, Inc.: *See*—
Tucker, James I., 4,242,844, Cl. 51-412.000.
Orliaguet, Maurice; and Colas, Christian F., to M A J, Societe a Responsabilite Limitee. Device for conditioning and preserving in vacuo plastic-wrapped sterilized products, notably linen, in an autoclave. 4,242,852, Cl. 53-89.000.
Ortho Pharmaceutical Corporation: *See*—
Capetola, Robert J.; and McGuire, John L., 4,243,673, Cl. 424-275.000.
Osaka, Kiyoshi: *See*—
Shirai, Haruo; Tanaka, Yoshikatsu; Kosuga, Zinzo; and Osaka, Kiyoshi, 4,243,474, Cl. 156-630.000.
Osawa, Yoshiro: *See*—
Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, 4,243,492, Cl. 203-8.000.
Osborne, George R., Sr. Connecting hinge system for prefabricated building foldable panel structures. 4,242,845, Cl. 52-69.000.
Osborne Industries, Inc.: *See*—
Freeborn, William D., 4,242,985, Cl. 119-54.000.
Osborne, Michael L.; and Hadley, Michael J., to USM Corporation. Blind fastener. 4,242,939, Cl. 411-41.000.
O'Shaughnessy, John F., to Ned Strongin Associates, Inc. Toy apparatus with photoemissive motor control system. 4,242,831, Cl. 46-251.000.
Ostling, Sture: *See*—
Persson, Stig; and Ostling, Sture, 4,243,276, Cl. 308-187.000.
Ostrelich, Michael J.: *See*—
Smith, Donald F.; and Ostrelich, Michael J., 4,243,287, Cl. 339-99.00R.
O'Sullivan, Denis J.; Bolger, Bernard J.; and Casey, T. Eisirt, to Loctite Corporation. Dental filling composition. 4,243,578, Cl. 260-42.520.
Otsuka Pharmaceutical Factory Inc.: *See*—
Kakumoto, Michio; Oe, Eizi; and Nakagawa, Hirosi, 4,243,932, Cl. 324-54.000.
Ott, Peter. Automatic injecting projectile. 4,243,036, Cl. 128-215.000.
Ouchi, Isao: *See*—
Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, 4,243,492, Cl. 203-8.000.
Outokumpu Oy: *See*—
Heimala, Seppo O., 4,243,499, Cl. 204-119.000.
Owens-Corning Fiberglas Corporation: *See*—
Hohman, Charles M., 4,243,423, Cl. 106-54.000.
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,243,426, Cl. 106-273.00R.
Oxygen Therapy Institute, Inc.: *See*—
Stewart, Maurice M., 4,243,155, Cl. 222-3.000.
P.W.T. Plastic World Technology Limited: *See*—
Tramezzani, Gicancarlo, 4,243,629, Cl. 264-563.000.
Pachmayr, Frank A.; and Farrar, Jack R., to Pachmayr Gun Works, Inc. Pistol grips having cushioning recesses. 4,242,824, Cl. 47-71.00P.
Pachmayr Gun Works, Inc.: *See*—
Pachmayr, Frank A.; and Farrar, Jack R., 4,242,824, Cl. 47-71.00P.
Pagani, Mario: *See*—
Bocca, Alberto; and Pagani, Mario, 4,242,770, Cl. 12-24.500.
Page, Victor J. Fluid operated control device. 4,242,940, Cl. 91-277.000.
Paget, Charles J.; and Wikel, James H., to Eli Lilly and Company. Substituted 1-sulfonylbenzimidazoles. 4,243,813, Cl. 548-306.000.
Pahl, Richard B. Quick-break attachment for a pole-top air-break switch. 4,243,854, Cl. 200-48.00R.
Paige, Earle J. Tool holder. 4,243,348, Cl. 408-186.000.
Pako Corporation: *See*—
Bowe, Gerald R.; and Stewart, James F., 4,243,314, Cl. 355-29.000.
Palmieri, John P.: *See*—
Palmieri, Vincent A.; and Palmieri, John P., 4,242,797, Cl. 30-276.000.
Palmieri, Vincent A.; and Palmieri, John P. Rotary nylon line vegetation cutter. 4,242,797, Cl. 30-276.000.
Palvarini, Attilio; Lorusso, Simone; and Longoni, Angelo, to Montedison S.p.A. Pesticide-containing plastic coverings for agricultural cultivations, and process for obtaining said coverings and for protecting the cultivations from infestant pests. 4,243,703, Cl. 427-276.000.
Panduit Corp.: *See*—
Kirsinas, Peter, Jr., 4,242,792, Cl. 29-857.000.
Panseri, Mario: *See*—
Mascioni, Umberto; Giani, Adolfo; and Panseri, Mario, 4,242,957, Cl. 101-126.000.
Panson, Armand J.: *See*—
Jackovitz, John F.; Panson, Armand J.; and Pantier, Earl A., 4,243,638, Cl. 423-17.000.
Pantier, Earl A.: *See*—
Jackovitz, John F.; Panson, Armand J.; and Pantier, Earl A., 4,243,638, Cl. 423-17.000.

Paolo, Presti: *See*—
Genevois, Jean L.; Paolo, Presti; and De Stefani, Giuseppe, 4,243,381, Cl. 432-75.000.

Papp, Alfred; and Harms, Hauke, to Siemens Aktiengesellschaft. Method for magneto-optical current measurements. 4,243,936, Cl. 324-96.000.

Pappalardo, P. Paul, to Greenstate, Inc. Method of forming an assembled article. 4,242,786, Cl. 29-416.000.

Pariani, Ronald L.; and Arp, David F., to Southwire Company. Multiple level refractory hearth for vertical shaft metal melting furnaces. 4,243,209, Cl. 266-219.000.

Paris, Alfonso A., Jr.; Muscanell, Douglas W.; and Grutter, James H., to New England Log Homes, Inc. Rafter side slotter. 4,243,082, Cl. 144-133.00R.

Parker-Hannifin Corporation: *See*—
Hoffman, Robert K.; and Kavanaugh, Mark A., 4,243,072, Cl. 137-637.100.

Parkison, Richard G., to American Standard Inc. Mixing valve. 4,243,063, Cl. 137-100.000.

Parlee-Anderson Corporation: *See*—
Anderson, Robert N., 4,243,411, Cl. 75-69.000.

Parrish, Charles A.; and Jennings, Richard E., to Sperry Corporation. Override means for automatic bale ejection drive. 4,242,857, Cl. 56-341.000.

Parsons, Charles H.; and Casper, Badenhorst H., to Infurnco (Proprietary) Limited. Electric arc furnaces. 4,243,832, Cl. 13-16.000.

Parts Handling, Inc.: *See*—
McKendrick, Lorne J., 4,243,060, Cl. 137-625.690.

Pascal, Robert; Lasperas nee Marnier, Monique; Rousset, Alain; Commeyras, Auguste; Taillades, Jacques; and Mion, Louis. Process for the chemical catalytic hydrolysis of an α-aminonitrile or of one of the salts thereof. 4,243,814, Cl. 548-344.000.

Patterson, David R., to RCA Corporation. Temperature compensated bias circuit for semiconductor lasers. 4,243,952, Cl. 331-94.50S.

Patton, Franklin C. Fruit harvesting assembly. 4,242,856, Cl. 56-339.000.

Paul, Malcolm D. Cold-pack goggles. 4,243,041, Cl. 128-402.000.

Paul, Swaraj; and Ranby, Bengt. Polymers with controlled sulfonic acid or sulfonate group content and a method for their synthesis. 4,243,772, Cl. 525-344.000.

Paul Wurth S.A.: *See*—
Legille, Edouard; Mahr, Rene; and Mailliet, Pierre, 4,243,351, Cl. 414-206.000.

Payne, Delmar V.: *See*—
Kang, Eyung W.; Brandao, Ruy L.; Bares, Jaromir R.; and Payne, Delmar V., 4,243,988, Cl. 343-5.0VQ.

Payne, Stanley A. E., to Mono Pumps (Africa) (Proprietary) Limited. Shaft coupling. 4,242,887, Cl. 64-4.000.

Pearson, Eugene W.; and Short, Wilbur G., to Canron Corp. Hydraulic press with integral knockout and stroke control. 4,242,901, Cl. 72-345.000.

Peche, Gerhard, to Siemens Aktiengesellschaft. Vacuum switch. 4,243,859, Cl. 200-144.00B.

Pedone, Angelo. Solar pick-up panel. 4,243,022, Cl. 126-449.000.

Pelmulder, John P., to Allied Water Corporation. Water purification process and system. 4,243,523, Cl. 210-652.000.

Penfold, Alan S., to Telic Corporation. Magnetic field generator for use in sputtering apparatus. 4,243,505, Cl. 204-298.000.

Pennwalt Corporation: *See*—
MacLeay, Ronald E.; and Kazmierczak, Robert T., 4,243,821, Cl. 568-561.000.

Penny, William H.: *See*—
Choksi, Pradip V.; Michael, Kenneth R.; and Penny, William H., 4,243,080, Cl. 141-2.000.

Pepe, Russell J.: *See*—
Beckerman, Howard L.; Pepe, Russell J.; and Dob, Allan M., 4,242,976, Cl. 112-264.100.

Pera, John D.: *See*—
Fenyes, Joseph G. E.; and Pera, John D., 4,243,524, Cl. 210-700.000.

Perchenok, Mark B.: *See*—
Vorona, Ilya I.; Ioganson, Rikhard A.; Perchenok, Mark B.; Chegodaev, Evgeny V.; and Chulin, Valentin I., 4,243,901, Cl. 310-94.000.

Pergunov, Alexandr I.: *See*—
Ushakov, Vladimir F.; Pergunov, Alexandr I.; Alexeev, Albert V.; Maslennikov, Pavel N.; and Seljutin, Vladimir I., 4,242,841, Cl. 51-263.000.

Perkert, Rudolf: *See*—
Skubich, Otto; Perkert, Rudolf; and Fischer, Karl Heinz, 4,243,106, Cl. 172-804.000.

Perkins, William C., to Rockwell International Corporation. Multiplexed carrier transmission through harmonic polluted medium. 4,244,047, Cl. 370-69.000.

Perks, Roger: *See*—
Lenaerts, George V.; Perks, Roger; and Dudley, Phillip J., 4,243,846, Cl. 179-90.00K.

Persson, Stig; and Ostling, Sture, to Aktiebolaget SKF. Rolling body retainer. 4,243,276, Cl. 308-187.000.

Peschel born Chaudron, Huguette; and Caffoz, Robert, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Process for spreading tobacco leaves. 4,243,057, Cl. 131-147.00A.

Peter, Jack; Offerman, Karl B.; Brown, Larry D.; and Stone, Derek J., to Cipher Data Products, Incorporated. Low profile magnetic tape drive with vacuum actuated auto-threading. 4,243,186, Cl. 242-195.000.

Petersen, Harro; Fischer, Kurt; Klug, Hans; Trimborn, Werner; and Schmidt, Horst, to BASF Aktiengesellschaft. Process for the manufacture of soft and hard resins of urea, formaldehyde and a CH-acidic aldehyde, and their use. 4,243,797, Cl. 528-239.000.

Peterson, Clayton R. Universal blower attachment unit. 4,242,794, Cl. 30-122.000.

Peterson, Kenneth M.: *See*—
Daniel, Sam M.; and Peterson, Kenneth M., 4,243,955, Cl. 332-37.00D.

Peterson, Richard H.; and Finch, Robert A. Musical tone generator system using multiple frequency synthesizers. 4,242,935, Cl. 84-1.010.

Petit, Andre, to Solvay & Cie. Process for the polymerization of vinyl chloride in aqueous suspension utilizing an oil-soluble initiator and subsequently a water-soluble initiator and use of the powders obtained thereby. 4,243,562, Cl. 260-17.00A.

Pfalzer, Lothar; and Fischer, Siegbert, to J. M. Voith GmbH. Process for treating waste paper with hardened water. 4,243,478, Cl. 162-4.000.

Pfeiffer, Hans C.; Ryan, Philip M.; and Weber, Edward V., to International Business Machines Corporation. Method and apparatus for forming a variable size electron beam. 4,243,866, Cl. 219-121.0EK.

Pfizer Inc.: *See*—
Barnish, Ian T.; Cross, Peter E.; and Dickinson, Roger P., 4,243,672, Cl. 424-274.000.
Bindra, Jasjit S., 4,243,674, Cl. 424-283.000.
Campbell, Simon F.; Danilewicz, John C.; Greengrass, Colin W.; and Plews, Rhona M., 4,243,666, Cl. 424-248.540.
Hess, Hans-Jurgen E.; Johnson, Michael R.; Bindra, Jasjit S.; and Schaaf, Thomas K., 4,243,595, Cl. 260-345.70P.

Philip Morris Incorporated: *See*—
de la Burde, Roger Z.; and Aument, Patrick E., 4,243,056, Cl. 131-140.00B.

Phillips, Brinley M.: *See*—
Messenger, Edward T.; Mather, Douglas E.; and Phillips, Brinley M., 4,243,549, Cl. 252-355.000.

Phillips, Charles A. Load responsive voltage controlled motor. 4,243,926, Cl. 318-798.000.

Phillips, Jerry L. Expandable sanding block for endless wrap around abrasive belts. 4,242,843, Cl. 51-380.000.

Phillips, Marie B.: *See*—
Harris, Don N.; Phillips, Marie B.; and Greenberg, Roland, 4,243,671, Cl. 424-273.00R.

Phillips Petroleum Company: *See*—
Drake, Charles A.; and Murtha, Timothy P., 4,243,610, Cl. 564-491.000.
Hunt, Harold R., 4,243,365, Cl. 425-222.000.
Smith, Ernest L., 4,242,984, Cl. 119-52.00R.
Welch, Melvin B.; and Dietz, Richard E., 4,243,552, Cl. 252-429.00B.
Williams, Ralph P., 4,243,793, Cl. 528-75.000.

Photon Power, Inc.: *See*—
Jordan, John F.; and Lampkin, Curtis M., 4,243,432, Cl. 136-244.000.

Piazza, John R., to Western Electric Company, Inc. Method of rendering an ink strippable. 4,243,700, Cl. 427-195.000.

Piet, Meyer; and Castor, James J., to Futurecraft Corporation. Fluid flow regulator. 4,243,069, Cl. 137-484.600.

Pioneer Electronic Corporation: *See*—
Misawa, Akira; and Numata, Tatsuo, 4,244,055, Cl. 455-174.000.

Piper, Bert W., to Piper, Bert William. Vehicle antenna. 4,243,989, Cl. 343-715.000.

Piper, Bert William: *See*—
Piper, Bert W., 4,243,989, Cl. 343-715.000.

Pitney Bowes, Inc.: *See*—
Scribner, Albert W., 4,243,869, Cl. 219-216.000.

Pittalis, Francesco: *See*—
Marconi, Walter; Pittalis, Francesco; Bartoli, Francesco; and Morisi, Franco, 4,243,776, Cl. 525-420.000.

Pittman, Charles U., Jr.; and Hanes, Ronald, to Pittman, Charles U., Jr. Production of 1,7-octadiene from butadiene. 4,243,829, Cl. 585-511.000.

Place, Donald E., to Therm-O-Disc Incorporated. Snap disc operated pressure switch. 4,243,858, Cl. 200-83.00P.

Plank, Charles J.: *See*—
Kerr, George T.; Plank, Charles J.; and Rosinski, Edward J., 4,243,828, Cl. 585-467.000.

Plattner, Werner, administrator: *See*—
Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; and Plattner, Werner, administrator, 4,243,807, Cl. 546-232.000.

Plempel, Manfred: *See*—
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; and Plempel, Manfred, 4,243,670, Cl. 424-269.000.

Plews, Rhona M.: *See*—
Campbell, Simon F.; Danilewicz, John C.; Greengrass, Colin W.; and Plews, Rhona M., 4,243,666, Cl. 424-248.540.

Poetsch, Dieter; and Gornott, Dietmar, to Robert Bosch GmbH. Charge proportional opto-electronic converter providing enhanced blue color signal. 4,244,003, Cl. 358-50.000.

Pohlman, Joe C.; and Romualdi, James P. Pole construction. 4,242,851, Cl. 52-743.000.

Polaroid Corporation: *See*—
Johnson, Bruce K.; and Whiteside, George D., 4,243,309, Cl. 354-197.000.

Polyair Produkt Design GmbH: *See*—
Kubelka, Axel, 4,243,163, Cl. 223-115.000.
Weigl, Erwin, 4,243,246, Cl. 280-628.000.

Polymer Investments N.V.: *See*—
Brown, Peter, 4,243,568, Cl. 260-29.60R.
Pomykacek, Josef: *See*—
Protiva, Miroslav; Rajsner, Miroslav; Sindelar, Karel; Jilek, Jiri; Bartl, Vaclav; Metysova, Jirina; Dlabac, Antonin; Langsadl, Leon; Pomykacek, Josef; and Miksik, Frantisek, 4,243,805, Cl. 544-375.000.
Pope, George N.: *See*—
Mitsche, Roy T.; and Pope, George N., 4,243,515, Cl. 208-138.000.
Popovici, Margarete: *See*—
Elsner, Gotz; Legler, Rudolf F.; and Popovici, Margarete, 4,243,748, Cl. 430-600.000.
Portis, Alan M.: *See*—
Grossman, Leonard N.; Portis, Alan M.; Bernatowicz, Henry; and Schoenig, Frederick C., Jr., 4,243,939, Cl. 324-201.000.
Portmann, Robert, to Ciba-Geigy Corporation. Process for the preparation of azo dyes. 4,243,583, Cl. 260-156.000.
Post Office, The: *See*—
Everard, John D., 4,243,977, Cl. 340-347.0DD.
Potchen, Jessie M.: *See*—
Potchen, Thomas M.; and Potchen, Jessie M., 4,243,464, Cl. 156-324.000.
Potchen, Thomas M.; and Potchen, Jessie M. Laminating method. 4,243,464, Cl. 156-324.000.
Potter, William D., to Smith & Nephew Research Limited. Medical compositions. 4,243,567, Cl. 260-29.6MM.
Powell, Roger A. Elastically deformed reflectors. 4,243,301, Cl. 350-296.000.
Powers, Edgar W. Chimney heat capturing system. 4,243,177, Cl. 237-51.000.
Powers, Robert A.; and Louzos, Demetrios V., to Union Carbide Corporation. Charge transfer complex cathodes for solid electrolyte cells. 4,243,732, Cl. 429-105.000.
Pozar, Cleve F. Pickup assembly for percussion instrument. 4,242,937, Cl. 84-1.150.
PPG Industries, Inc.: *See*—
Hanneken, Henry P.; and Marriott, William H., Jr., 4,242,782, Cl. 29-129.000.
Sensi, John E., 4,243,402, Cl. 65-29.000.
PQ Corporation: *See*—
Campbell, Thomas C.; Hertzenberg, Elliot P.; and Sherry, Howard S., 4,243,545, Cl. 252-140.000.
Pratt, Albert R.: *See*—
Crowley, Charles F.; and Pratt, Albert R., 4,243,285, Cl. 339-32.00R.
Pratt, Dexter, Jr.; and Holz, John F., to Harnischfeger Corporation. Retractable boarding ladder. 4,243,120, Cl. 182-98.000.
Pratt, Roy E.: *See*—
Kliesch, Howard C.; McWilliams, Daniel N.; Pratt, Roy E.; and Schmude, Donald H., 4,243,630, Cl. 422-62.000.
PREH, Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co.: *See*—
Steigerwald, Wolf-Erhard; Siede, Heinz-Jurgen; Rosner, Bela; and Zimmermann, Jurgen, 4,243,969, Cl. 338-309.000.
Prete, John E. Method of making ornamental jewelry stones. 4,243,626, Cl. 264-153.000.
Price, Paul J. Portable lean-to exercising device. 4,243,219, Cl. 272-117.000.
Prichard, Evan S., to Challenge-Cook Bros. Incorporated. Trailer transit mixer. 4,243,328, Cl. 366-62.000.
Prin, Jean-Claude. Carrier for packing and carrying articles. 4,243,171, Cl. 229-52.00B.
Prins, Steven P. Adjustable orthodontic bracket. 4,243,387, Cl. 433-16.000.
Pritchett, Ervin G., to National Distillers and Chemical Corp. Compatibilization of blends and composites. 4,243,769, Cl. 525-222.000.
Pritelli, Giuseppe, to Pritelli, S.p.A. Automatic apparatus for machining panels, planks and similar articles made of wood, wooden derivatives and the like. 4,243,081, Cl. 144-3.00A.
Pritelli, S.p.A.: *See*—
Pritelli, Giuseppe, 4,243,081, Cl. 144-3.00A.
Procter & Gamble Company, The: *See*—
Francis, Marion D., 4,243,652, Cl. 424-1.000.
Mohlenkamp, Marvin J., Jr; and Hiler, George D., 4,243,691, Cl. 426-649.000.
Production Plus Corporation: *See*—
Davitz, Walter E., 4,243,146, Cl. 211-118.000.
Produits Chimiques Ugine Kuhlmann: *See*—
Bourdauducq, Paul M. C.; Brouard, Claude M. H. E.; Moerel, Claude L. E.; and Stiot, Jean-Pierre H., 4,243,606, Cl. 260-465.00D.
Prolss, Ludwig, to Kilcher-Chemie AG. Cross-flow filtration apparatus. 4,243,536, Cl. 210-321.100.
Protective Treatments, Inc.: *See*—
Wenrick, Brian A., 4,243,711, Cl. 428-31.000.
Protiva, Miroslav; Rajsner, Miroslav; Sindelar, Karel; Jilek, Jiri; Bartl, Vaclav; Metysova, Jirina; Dlabac, Antonin; Langsadl, Leon; Pomykacek, Josef; and Miksik, Frantisek, to SPOFA, spojene podniky pro zdravotnickou vyrobu. 3 Fluoro-10-piperazino-8-substituted 10,11-dihydrodibenzo-(bf) thiepins and method for the preparation thereof. 4,243,805, Cl. 544-375.000.
Proud, Joseph M., Jr., to GTE Laboratories Incorporated. Random noise generators. 4,243,950, Cl. 331-78.000.
Pruss, Hans-Dieter; and Bahrs, Lutje-Wilhelm, to Lever Brothers Company. Preparation of cheese with ropy lactic acid bacteria. 4,243,684, Cl. 426-40.000.
Puchta, Rolf; Schwadtke, Karl; Harder, Hans; and Weber, Rudolf, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Process for bleaching textiles in the mechanical laundry drier. 4,243,391, Cl. 8-111.000.
Purcell, Thomas A.; Shroot, Braham; and Galtier, Daniel J. M., to Synthelabo. 2-Heterocyclylalkyl-6-methoxy-naphthalenes. 4,243,665, Cl. 424-246.000.
Purdue Research Foundation: *See*—
Regnier, Frederick E.; and Chang, Shung-Ho, 4,243,753, Cl. 435-288.000.
Puyana, Alfonso. Therapeutic pressure strap. 4,243,028, Cl. 128-165.000.
Quack, Hans; and Senn, Armin E., to Sulzer Brothers Limited. Apparatus for a refrigeration circuit. 4,242,885, Cl. 62-500.000.
Quance, Raymond P. Ski equipment transport and security method and apparatus. 4,242,813, Cl. 36-132.000.
Quantor Corporation: *See*—
Herborn, Peter E., 4,243,310, Cl. 354-299.000.
Quayle, Ian H., to Chronolog Systems Limited. Analogue voltage indicator with sequence of light emitting diodes. 4,243,985, Cl. 340-753.000.
Quemner, Jean M.: *See*—
Arnaud, Claude J.; Quemner, Jean M.; and Roche, Gaston P., 4,243,773, Cl. 525-387.000.
Querton, Jean-Pierre: *See*—
Vinel, Rene; Querton, Jean-Pierre; and Serville, Claude, 4,243,130, Cl. 192-98.000.
Quiroga, Pascual A. Rotary engine with lateral pistons. 4,243,006, Cl. 123-247.000.
R. W. Lyall & Co., Inc.: *See*—
Hill, Donald C.; and Lyall, Robert W., 4,243,254, Cl. 285-242.000.
Raeymaekers, Alfons H. M.; Van Gelder, Josephus L. H.; Boeckx, Gustaaf M.; and Van Hemeldonck, Lodewijk L., to Janssen Pharmaceutica N.V. 5-[4-(Diarylmethyl)-1-piperazinylalkyl]benzimidazole derivatives. 4,243,806, Cl. 544-396.000.
Rahal, Marcel T. Traverse rod drapery hook. 4,242,772, Cl. 16-93.00D.
Raheja, Raj K.: *See*—
Barile, Conrad A.; Goth, Goerge R.; Makris, James S.; Nagarajan, Arunachala; and Raheja, Raj K., 4,243,435, Cl. 148-1.500.
Rainin, Edgar A. Intraocular lens structure. 4,242,760, Cl. 3-13.000.
Raistrick, Bernard: *See*—
Hill, Robert O.; and Raistrick, Bernard, 4,243,640, Cl. 423-132.000.
Rajsner, Miroslav: *See*—
Protiva, Miroslav; Rajsner, Miroslav; Sindelar, Karel; Jilek, Jiri; Bartl, Vaclav; Metysova, Jirina; Dlabac, Antonin; Langsadl, Leon; Pomykacek, Josef; and Miksik, Frantisek, 4,243,805, Cl. 544-375.000.
Ranby, Bengt: *See*—
Paul, Swaraj; and Ranby, Bengt, 4,243,772, Cl. 525-344.000.
Randoll, Ivan H.; and McShirley, Robert C., to Randoll, Ivan H. Typodont having removable teeth. 4,242,812, Cl. 434-263.000.
Ranganathan, Ramachandra: *See*—
Sovak, Milos; and Ranganathan, Ramachandra, 4,243,653, Cl. 424-5.000.
Ransmark, Sven-Erik L. Process for purifying liquids and a device for carrying out the process. 4,243,526, Cl. 203-10.000.
Rasmussen, Chris R., to McNeil Laboratories, Incorporated. 2-Benzhydrylimino-1,3-diazacarbocyclic compounds as inhibitors of gastric secretion. 4,243,667, Cl. 424-251.000.
Ratcliff, Lloyd P. Caloric and/or carbohydrate calculator. 4,244,020, Cl. 364-413.000.
Rauch, Joseph, to Societe de Vente de l'Aluminium Pechiney. Process of quenching metal pieces and product produced. 4,243,439, Cl. 148-20.600.
Raven, Robert S., to Westinghouse Electric Corp. Electronic stabilization for displaced phase center systems. 4,244,036, Cl. 367-88.000.
Rayfield, John F.; and Schieble, John D., to ILC Dover, a division of ILC Industries, Inc. Anti-exposure inflatable structure. 4,242,769, Cl. 9-330.000.
Raymond, Roger S., to United States of America, Air Force. Thermoclamps. 4,242,899, Cl. 72-342.000.
Raynal, Serge F.: *See*—
Boileau, Sylvie L.; Caubere, Paul J.; Ndebeka, Gilberte; Lecolier, Serge L.; and Raynal, Serge F., 4,243,787, Cl. 526-180.000.
Raytheon Company: *See*—
Crowley, Charles F.; and Pratt, Albert R., 4,243,285, Cl. 339-32.00R.
Wakeman, David R.; Goldberg, Ernest; and MacKenzie, Gordon C., 4,242,962, Cl. 102-213.000.
RCA Corporation: *See*—
Balaban, Alvin R.; and Steckler, Steven A., 4,243,953, Cl. 331-117.00R.
Bortfeld, David P.; and Vieland, Leon J., 4,243,912, Cl. 315-3.000.
Caprari, Fausto, 4,243,917, Cl. 315-241.00R.
Dholakia, Anil R., 4,243,395, Cl. 51-293.000.
Ipri, Alfred C., 4,244,001, Cl. 357-44.000.
McSparran, Joseph F., 4,243,283, Cl. 339-14.00R.
Meise, William H., 4,243,918, Cl. 315-389.000.
Mezrich, Reuben S.; and Stewart, Wilber C., 4,242,913, Cl. 73-626.000.
Nero, Leroy W., 4,243,913, Cl. 315-8.000.
Patterson, David R., 4,243,952, Cl. 331-94.50S.
Schade, Otto H., Jr., 4,243,948, Cl. 330-289.000.
Shai, Sol, 4,244,027, Cl. 364-703.000.
Winarsky, Norman D.; Cohen, Roger W.; Bortfeld, David P.; and Vieland, Leon J., 4,243,911, Cl. 315-3.000.

Wolkstein, Herbert J.; Dornan, Brian R.; and Goel, Jitendra, 4,243,951, Cl. 331-94.50H.

Reddig, Doyle A.: *See—*
Smith, Wyatt B., 4,242,827, Cl. 43-42.100.

Reed, Floyd W. Cotton module transport apparatus. 4,243,353, Cl. 414-439.000.

Reed, Robert D., to John Zink Company. Gas or liquid fuel burner with air register control of tangential/axial combustion air movement. 4,243,375, Cl. 431-174.000.

Rees, Herbert; and Nevrela, James D., to Globe-Union Inc. Composite molding apparatus for articles from two materials having a rotary mold block which includes pins for providing core areas. 4,243,362, Cl. 425-130.000.

Rees, Herbert; Brown, Paul; and Grund, Miroslav, to Husky Injection Molding Systems Inc. Safety mechanism for injection-molding machine provided with take-off member. 4,243,364, Cl. 425-153.000.

Regamey, Pierre E. Method and device for transferring condensates from a low pressure network into a high pressure network in a system of generation, distribution and utilization of condensable vapor. 4,242,988, Cl. 122-458.000.

Regel, Erik; Draber, Wilfried; Buchel, Karl H.; and Plempel, Manfred, to Bayer Aktiengesellschaft. α-(4-Biphenylyl)-benzyl-azolium salts and their use for combating micro-organisms. 4,243,670, Cl. 424-269.000.

Reggiani S.p.A.: *See—*
Mascioni, Umberto; Giani, Adolfo; and Panseri, Mario, 4,242,957, Cl. 101-126.000.

Regie Nationale des Usines Renault: *See—*
Baudoin, Patrice, 4,242,922, Cl. 74-687.000.

Regnier, Frederick E.; and Chang, Shung-Ho, to Purdue Research Foundation. Apparatus for enzyme detection. 4,243,753, Cl. 435-288.000.

Reid, Terry A.: *See—*
Gladrow, Elroy M.; Schuette, William L.; and Reid, Terry A., 4,243,557, Cl. 252-455.00Z.

Reil, Wilhelm, to Tetra Pak Developpement SA. Device for filling a measured quantity of a flowing medium into a package. 4,243,160, Cl. 222-373.000.

Reinhardt, Erik, to F. L. Smidth & Company. Rotary kiln. 4,243,384, Cl. 432-80.000.

Reis, Robert D., to United Electric Controls Company. Control device. 4,243,857, Cl. 200-83.00C.

Rektorat Slovenskej vysokej skoly technickej: *See—*
Vegh, Daniel; and Kovac, Jaroslav, 4,243,596, Cl. 260-347.700.

Renner and Lovelace, Inc.: *See—*
Renner, Robert A.; and Lovelace, Ralph, 4,242,947, Cl. 92-108.000.

Renner, Robert A.; and Lovelace, Ralph, to Renner and Lovelace, Inc. Hydraulic actuator. 4,242,947, Cl. 92-108.000.

Renoux, Robert A., to Societe Anonyme de Techniques Audio-Visuelles S.A.T.A.V. Device for pressing objects made from a thermoplastic material, and particularly phonographic records. 4,243,367, Cl. 425-385.000.

Repella, James A., to Garlock Inc. One-piece oil seal and boot seal. 4,243,232, Cl. 277-37.000.

Repella, James A., to Mather Company, The. Composite polytetrafluoroethylene and elastomer lip seal. 4,243,235, Cl. 277-152.000.

Replogle, Douglas L., to Moog Recreational Products, Inc. Ski brake. 4,243,244, Cl. 280-605.000.

Resco Products, Inc.: *See—*
Jeffries, Ernest H., Jr., 4,243,385, Cl. 432-241.000.

Rettberg, Leonard W., to Interproduct B.V. Adjustable pouring dispenser. 4,243,157, Cl. 222-44.000.

Rexnord Inc.: *See—*
Hornak, Alexander, 4,243,255, Cl. 292-113.000.

Reynolds, Jack B.; and Amos, Charles R., to Dow Chemical Company, The. Process for the production of dead burned refractory magnesia. 4,243,424, Cl. 106-58.000.

Rezin, Robert G., to Universal Sanitary Equipment Manufacturing Co., Inc. Modular lift station construction. 4,242,847, Cl. 52-169.600.

Rheinmetall GmbH: *See—*
Boeder, Dieter; Jaeneke, Christian; Romer, Rudolf; and Sikorski, Guenter, 4,242,960, Cl. 102-92.700.

Rheodyne Incorporated: *See—*
Gundelfinger, Richard, 4,242,909, Cl. 73-422.0GC.

Rhoades, Craig A.: *See—*
Meeks, Thomas; and Rhoades, Craig A., 4,243,098, Cl. 166-59.000.

Rhodes, Richard O., to Fafco, Inc. Solar heating panel forming apparatus and method. 4,243,454, Cl. 156-162.000.

Ribalta, Jose M. B.: *See—*
Adsara, Jorge D.; Casadio, Silvano; Ribalta, Jose M. B.; and Bruseghini, Leonida, 4,243,679, Cl. 424-319.000.

Rice, Doris M.: *See—*
McDaniel, Kenneth G.; Rice, Doris M.; and Cuscurida, Michael, 4,243,760, Cl. 521-176.000.

Richards, William E.; and Taylor, Henry F., to United States of America, Navy. Large aperture phased element modulator/antenna. 4,243,300, Cl. 350-150.000.

Richmond, Kenneth D.; Miranti, Joseph P., Jr.; and Henderson, Dewey D., to Dayco Corporation. Method and apparatus for making wrapped, molded, toothed belts. 4,243,452, Cl. 156-138.000.

Ricoh Company, Ltd.: *See—*
Izushima, Masaaki; Shintaro, Abe; and Haganuma, Tomoyuki, 4,244,031, Cl. 364-900.000.

Riggers Manufacturing Company: *See—*
Lampson, Neil F., 4,243,148, Cl. 212-196.000.

Riggs, Olen L., Jr.; and Brunsell, Dennis A., to Kerr-McGee Corporation. Process for oxidizing a metal of variable valence by controlled potential electrolysis. 4,243,494, Cl. 204-1.500.

Riis, Peter: *See—*
Ganter, Wolfgang; Ginter, Albert; King, Josef; and Riis, Peter, 4,244,038, Cl. 368-35.000.

Riley, Robert L.; and Grabowsky, Richard L., to UOP Inc. Preparation of gas separation membranes. 4,243,701, Cl. 427-244.000.

Ritchie, Leon T.: *See—*
Lucius, John E.; and Ritchie, Leon T., 4,243,288, Cl. 339-99.00R.

Ritter, Ernst; Faupel, Werner; Hummel, Karsten; and Locher, Johannes, to Robert Bosch GmbH. Injection pump with electronically controlled full-load stop. 4,243,004, Cl. 123-367.000.

Rivest, Robert W.: *See—*
Lynch, Harry J.; and Rivest, Robert W., 4,243,030, Cl. 128-213.00R.

Rizzuto, Dennis. Image projection system. 4,243,307, Cl. 353-57.000.

Robatel, S.L.P.I.: *See—*
Buffet, Denis, 4,243,172, Cl. 233-20.00A.

Robert Bosch GmbH: *See—*
Armbruster, Gerhard; Kleider, Albert; and Vogel, Eberhard, 4,242,839, Cl. 51-170.0MT.
Bogner, Karl-Heinz; and Sprenger, Martin;, 4,243,964, Cl. 335-156.000.
Jenner, Rolf-Dieter; Schafer, Dieter; and Bauer, Wolfgang O., 4,242,802, Cl. 33-174.00B.
Knapp, Heinrich, 4,243,003, Cl. 123-442.000.
Poetsch, Dieter; and Gornott, Dietmar, 4,244,003, Cl. 358-50.000.
Ritter, Ernst; Faupel, Werner; Hummel, Karsten; and Locher, Johannes, 4,243,004, Cl. 123-367.000.
Scherenberg, Dieter; and Benedikt, Walter, 4,242,990, Cl. 123-263.000.
Scherenberg, Dieter; and Bianchi, Valerio, 4,242,991, Cl. 123-326.000.
Schramm, Herbert; and Wurst, Bert, 4,242,995, Cl. 123-425.000.
Suchowerskyj, Wadym; Seibel, Berthold; and Werner, Peter, 4,243,971, Cl. 340-52.00H.

Roberts, Michael G.: *See—*
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,243,426, Cl. 106-273.00R.

Robertshaw Controls Company: *See—*
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Rodgers, Robert E., Jr., to Schlumberger Technology Corporation. Selectively-controlled well bore apparatus. 4,243,099, Cl. 166-65.00R.

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Rollband, Ernest J.; and West, Robert F., to Stanley Works, The. Knife handle. 4,242,795, Cl. 30-162.000.
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Rolls-Royce Limited: *See*—
Lind, David J.; Coffey, Valerie J.; and Hallam, Joyce, 4,243,646, Cl. 423-447.100.
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Rom, Frank E.; Wenzler, Carl J.; and Maag, William L., to Rom-Aire Solar Corporation. Solar collector. 4,243,023, Cl. 126-449.000.
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Rosensaft, Michael N.; and Webb, Richard L., to American Cyanamid Company. Synthetic polyester surgical articles. 4,243,775, Cl. 525-415.000.
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Ruof, Edgar J., to Goodyear Aerospace Corporation. AC to DC converter for antiskid systems. 4,243,940, Cl. 328-140.000.
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Ryerson, John D., to Energy for Independence, Inc. Solid state sensor. 4,243,631, Cl. 422-90.000.
Ryu, Ji-Yong, to UOP Inc. Process for the conversion of aromatic hydrocarbons. 4,243,827, Cl. 585-463.000.
Sadeh, Dora; and Hexter, Charles S., to Miles Yeda Ltd.; and Hypolab S.A. Immunoassay employing an enzyme label. 4,243,749, Cl. 435-7.000.
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Samejima, Toshihide; Moritani, Nakanobu; Oda, Hajime; and Fujita, Masanori, to Kabushiki Kaisha Seikosha. Alarm timepiece. 4,244,042, Cl. 368-73.000.
Sams, Kenneth. Rotary wing device. 4,243,190, Cl. 244-153.00A.
Sanada, Seiki: *See*—
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Cha, John H.; Brown, Wesley A.; Weldon, Harry P.; and Whyte, Daniel G., 4,243,345, Cl. 405-168.000.
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Sato, Hideaki: *See*—
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Sato, Susumu; and Tsunemitsu, Hideo, to Nippon Electric Co., Ltd. Semiconductor device having bump terminal electrodes. 4,244,002, Cl. 357-68.000.
Satoh, Ken, to Olympus Optical Co., Ltd. Cue recording system for magnetic recorder. 4,244,009, Cl. 360-71.000.
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Saul, David L.; and Rubin, David, to United States of America, Navy. Frequency stabilization technique for microstrip oscillators. 4,243,949, Cl. 331-9.000.
Saunders, Andrew A., Jr.: *See*—
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Savage, James G.; and Jagger, Brian E., to Xerox Corporation. Apparatus for adjusting a carriage relative to a platen. 4,243,331, Cl. 400-59.000.
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Savolainen, Jaakko; Engdahl, Holger; Luukkainen, Yrjo; Tolvanen, Martti; and Surakka, Jorma, to Enso-Gutzeit Osakeyhito. Filters with filtrate chamber overflow partitions having plural outlets. 4,243,533, Cl. 210-247.000.
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Schaaf, Thomas K.: *See*—
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Schade, Otto H., Jr., to RCA Corporation. Substantially temperature-independent trimming of current flows. 4,243,948, Cl. 330-289.000.
Schaefer, Arthur E., to C F Braun & Co. Hydrogen cryogenic purification system. 4,242,875, Cl. 62-23.000.

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Schafer, Dieter: *See—*
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Schafer, Paul; Berendt, Hans-Ulrich; and Haase, Jaroslav, to Ciba-Geigy Corporation. Process for dyeing or printing fibrous material using quaternary polymerized ammonium salts as assistants. 4,243,390, Cl. 8-553.000.
Schaidl, Hubert; and Leingartner, Josef, to Dorst-Keramikmaschinen-Bau Otto Dorst und Dipl.-Ing. Walter Schlegel. Stepping advancing device adapted for use with component support tables and other purposes. 4,242,968, Cl. 108-20.000.
Scharfe, James A., Jr. Digital autostart circuit. 4,243,836, Cl. 178-4.10R.
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Schenck, John F., III: *See—*
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Scherenberg, Dieter; and Benedikt, Walter, to Robert Bosch GmbH. Spark ignited internal combustion engine. 4,242,990, Cl. 123-263.000.
Scherenberg, Dieter; and Bianchi, Valerio, to Robert Bosch GmbH. Method and apparatus for adjusting fuel supply to an internal combustion engine. 4,242,991, Cl. 123-326.000.
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Kruger, Hans-Rudolf; Arndt, Friedrich; and Rusch, Reinhart, 4,243,404, Cl. 71-73.000.
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Schertz, Burtron D.; and Aldridge, Frederick A., to General Motors Corporation. Low level LC oscillator. 4,243,954, Cl. 331-117.00R.
Schieble, John D.: *See—*
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Schiel, Christian; and Schmalstieg, Heinrich, to J. M. Voith GmbH. Head box for a paper making machine with a guide surface adjustably tensioned. 4,243,483, Cl. 162-343.000.
Schlangenotto, Heinrich; Sawitzki, Friedhelm; and Henson, Ronald, to Licentia Patent-Verwaltungs-G.m.b.H. Safety circuit for a semiconductor element. 4,243,998, Cl. 357-28.000.
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Schmid, Paul. Fluid flow control valve. 4,243,377, Cl. 431-344.000.
Schmidt, Andreas, to Ciba-Geigy Corporation. Phenol-acetals. 4,243,816, Cl. 560-60.000.
Schmidt, Erich; and Arndt, Friedrich, to Schering Aktiengesellschaft, DEX. 1,2,4-Oxadiazole derivatives and herbicide composition containing same. 4,243,409, Cl. 71-92.000.
Schmidt, Hans-Joachim, to Te ka De Felten & Guilleaume Fernmeldeanlagen GmbH. Universal equalizer. 4,243,957, Cl. 333-28.00R.
Schmidt, Helmut: *See—*
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Schmidt, Paul J.; and Hung, William M., to Sterling Drug Inc. Carbonless duplicating systems. 4,243,250, Cl. 282-27.500.
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Schoeps, Knut C., to Atlas Copco Aktiebolag. Device for tightening a screw joint. 4,243,129, Cl. 192-56.00C.
Scholz, Hansjugen; Backhaus, Hans-Gerd; and Brambilla, Luigi, to Daimler-Benz Aktiengesellschaft. Air bag system for the protection of the passengers of motor vehicles in case of accidents. 4,243,248, Cl. 280-735.000.
Scholze, Horst; and Schmidt, Helmut, to Fraunhofer-Gesellschaft. Process for the production of silicic acid heteropolycondensates useful as coating materials. 4,243,692, Cl. 427-2.000.
Schorfheide, James J., to Exxon Research & Engineering Co. Hydrorefining process. 4,243,519, Cl. 208-210.000.
Schoultz, Sven. Metal strip edge protecting and reinforcing channel. 4,242,848, Cl. 52-716.000.
Schramm, Herbert; and Wurst, Bert, to Robert Bosch GmbH. Performance optimizing control system for an internal combustion engine. 4,242,995, Cl. 123-425.000.
Schreiber, William L.: *See—*
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Schroder, Ernst, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit for automatic dynamic compression or expansion. 4,243,944, Cl. 330-135.000.
Schroeder, Dale W.: *See—*
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Schroeter, Siegfried H.; and Olson, Daniel R., to General Electric Company. Silicone coated abrasion resistant polycarbonate article. 4,243,720, Cl. 428-412.000.
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Schuette, William L.: *See—*
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Schurger, Judith: *See—*
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Schurger, Severin G.; and Schurger, Judith. Fly swatter. 4,242,828, Cl. 43-137.000.
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Schwarz, Alois; Mautz, Karlheinz; and Stephan, Michael, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Rotor structure, especially for hingeless rotary wing aircraft. 4,243,359, Cl. 416-138.000.
Schwarzmann, Frank, to Midwest Cardiovascular Institute Foundation. Blood hematocrit monitoring system. 4,243,883, Cl. 250-343.000.
Schwedes, Wilhelm: *See—*
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Schweiger, Fritz, to Hochtemperatur-Kernkraftwerk GmbH (HKG) Gemeinsames Europaisches Unternehmen. Gas-cooled high temperature nuclear reactors. 4,243,487, Cl. 176-38.000.
Schweizer, Heinz: *See—*
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SCM (Canada) Limited: *See—*
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Scott, Douglas R., to Robertshaw Controls Company. Temperature sensing unit, parts therefor and methods of making the same. 4,243,968, Cl. 338-28.000.
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Scribner, Albert W., to Pitney Bowes, Inc. Fusing device for electrostatic copier. 4,243,869, Cl. 219-216.000.
Seaquist Valve Co., Div. of Pittway Corp.: *See—*
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Seelbach, Walter C., to Motorola, Inc. Semiconductor temperature sensor. 4,243,898, Cl. 307-310.000.
Seguin, Pierre, to Chavanoz SA. Method for making a remote control cable. 4,243,445, Cl. 156-55.000.
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Seitz, Karl, to Ciba-Geigy Corporation. Process for the production of pyridone compounds. 4,243,809, Cl. 546-291.000.
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Sekiya, Fukuo: *See—*
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Self, Cecil H., to Schenck, John F., III. Air gun with safety nozzle. 4,243,178, Cl. 239-436.000.
Seligson, Charles. Striping box with more than one yarn finger activated at a time. 4,242,890, Cl. 66-133.000.
Seljutin, Vladimir I.: *See—*
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Senn, Armin E.: *See*—
Quack, Hans; and Senn, Armin E., 4,242,885, Cl. 62-500.000.
Sensi, John E., to PPG Industries, Inc. Apparatus for measuring temperatures in molten metal. 4,243,402, Cl. 65-29.000.
Seo, Ikuo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for preparation of pitch for producing carbon fiber. 4,243,512, Cl. 208-39.000.
Seppanen, Erkki O. Forming paper using a curved fin to facilitate web transfer. 4,243,482, Cl. 162-202.000.
Serrano, Anthony B. Boring attachment for radial arm saws. 4,243,083, Cl. 144-35.00A.
Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See*—
Bossuet, Jean; Godet, Jean; Guiton, Jean-Francois; Sizarol, Rene; and Waegaert, Pierre, 4,243,055, Cl. 131-76.000.
de Angelis, Henri, 4,242,805, Cl. 34-1.000.
Peschel born Chaudron, Huguette; and Caffoz, Robert, 4,243,057, Cl. 131-147.00A.
Serville, Claude: *See*—
Vinel, Rene; Querton, Jean-Pierre; and Serville, Claude, 4,243,130, Cl. 192-98.000.
Seto, David K.: *See*—
Horng, Cheng T.; Lillja, Harold V.; and Seto, David K., 4,242,791, Cl. 29-578.000.
Sevastianov, Viktor V.; and Kazimirov, Eduard K. Apparatus for electrical stimulation of mammae. 4,243,043, Cl. 128-422.000.
Severson, Asbjorn M., to Honeywell Inc. Light-weight-trough type solar concentrator shell. 4,243,019, Cl. 126-438.000.
Shackelford, Carl L., to Altex Scientific, Inc. Sample injection valve. 4,243,071, Cl. 137-625.460.
Shackleford, Geoffrey G., to Lansing Bagnall Limited. Gripper mechanism. 4,243,257, Cl. 294-88.000.
Shaer, Elias H., to Drackett Company, The. Stable aqueous compositions containing enzymes. 4,243,546, Cl. 252-174.120.
Shai, Sol, to RCA Corporation. Digital open loop programmable frequency multiplier. 4,244,027, Cl. 364-703.000.
Sharp Kabushiki Kaisha: *See*—
Kameyama, Atsumi, 4,242,799, Cl. 30-43.100.
Shaw, David N., to Dunham-Bush, Inc. Attic mounted solar assist multi-source/sink residential heat pump system. 4,242,872, Cl. 62-2.000.
Shebalin, Rudolf I.: *See*—
Deribas, Andrei A.; Limasov, Alexei I.; Matytsin, Alexei I.; Staver, Anatoly M.; Shebalin, Rudolf I.; and Yashin, Jury N., 4,242,787, Cl. 29-421.00E.
Shell Oil Company: *See*—
Ehrhardt, William M.; and Haury, Earl J., 4,243,007, Cl. 123-419.000.
Vogel, Jacobus E., 4,243,097, Cl. 165-163.000.
Shelley, Carlton E. Water balloon game. 4,243,220, Cl. 273-1.00R.
Sheltech, Inc.: *See*—
Shelton, Russell S., 4,243,062, Cl. 137-62.000.
Shelton, Russell S., to Sheltech, Inc. Thermostatic self-powered drain valve. 4,243,062, Cl. 137-62.000.
Shephard, Margaret C.: *See*—
Balasubramanyan, Sugavanam; and Shephard, Margaret C., 4,243,405, Cl. 71-76.000.
Shepherd, Robert G., to American Cyanamid Company. Ring-fluorinated 4-(hexadecyl-amino) N-substituted benzamide compounds. 4,243,609, Cl. 564-91.000.
Shepherd, William W., Sr., to International Safety Industries Ltd. Steering stabilizer for motor vehicles. 4,243,240, Cl. 280-94.000.
Sherry, Howard S.: *See*—
Campbell, Thomas C.; Hertzenberg, Elliot P.; and Sherry, Howard S., 4,243,545, Cl. 252-140.000.
Sherwin-Williams Company, The: *See*—
Yapp, William J.; and McDonald, Robert E., 4,243,705, Cl. 427-386.000.
Sherwood, William G.; Hodges, Donald R.; and Nikolic, Cvetko, to Amax Inc. Nickel electrowinning using reduced nickel oxide as a fluidized cathode. 4,243,498, Cl. 204-112.000.
Shiba, Hiroshi; and Murata, Katsuhiro, to Nippon Graphite Industries, Ltd. Method of forming electrode connector for liquid crystal display device. 4,243,455, Cl. 156-187.000.
Shibata, Akira, to Chugai Denki Kogyo Kabushiki-Kaisha. Integrated Ag-SnO alloy electrical contact materials. 4,243,413, Cl. 75-234.000.
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Okawa, Masahisa, to Sumitomo Chemical Co., Ltd. Catalysts for the polymerization of olefins. 4,243,786, Cl. 526-137.000.
Shigemori, Youjiro, to Star Seimitsu Kabushiki Kaisha. Ribbon cartridge. 4,243,334, Cl. 400-247.000.
Shikany, S. David: *See*—
Niven, William A.; Shikany, S. David; and Shira, Michael L., 4,243,900, Cl. 310-49.00R.
Shima, Kiyoshi. Screw propeller with no shaft boss and ship thruster using such screw propeller. 4,242,979, Cl. 440-38.000.
Shimada, Yasuomi: *See*—
Takahashi, Kenichi; Fukuyama, Tatsuo; Ueno, Takafumi; Shimada, Yasuomi; and Ishii, Shinichiro, 4,243,839, Cl. 179-1.00F.
Shimaguchi, Takashi: *See*—
Sakai, Junji; Morimoto, Syogo; and Shimaguchi, Takashi, 4,243,420, Cl. 106-38.300.
Shimai, Hideo, to Yoshida Kogyo KK. Method for gapping a slide fastener chain. 4,242,785, Cl. 29-408.000.
Shimizu, Katsuichi: *See*—
Masuda, Shunichi; and Shimizu, Katsuichi, 4,243,313, Cl. 355-14.00R.
Shin-Etsu Chemical Co. Ltd.: *See*—
Takamizawa, Minoru; Okamoto, Haruo; Umemura, Mitsuo; and Kooya, Kazuo, 4,243,607, Cl. 570-257.000.
Shin-Etsu Handatai Co. Ltd.: *See*—
Yamaguchi, Hisayoshi; and Kuroyanagi, Itsuo, 4,243,473, Cl. 156-626.000.
Shin-Kobe, Electric Machinery Co., Ltd.: *See*—
Shirai, Haruo; Tanaka, Yoshikatsu; Kosuga, Zinzo; and Osaka, Kiyoshi, 4,243,474, Cl. 156-630.000.
Shinoda, Nobuhiko: *See*—
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.
Shintaro, Abe: *See*—
Izushima, Masaaki; Shintaro, Abe; and Haganuma, Tomoyuki, 4,244,031, Cl. 364-900.000.
Shioya, Toshio; Nishimura, Hiroyuki; and Umemoto, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Engine exhaust gas recirculation system. 4,242,998, Cl. 123-568.000.
Shira, Michael L.: *See*—
Niven, William A.; Shikany, S. David; and Shira, Michael L., 4,243,900, Cl. 310-49.00R.
Shirai Denshi Kogyo Co., Ltd.: *See*—
Shirai, Haruo; Tanaka, Yoshikatsu; Kosuga, Zinzo; and Osaka, Kiyoshi, 4,243,474, Cl. 156-630.000.
Shirai, Haruo; Tanaka, Yoshikatsu; Kosuga, Zinzo; and Osaka, Kiyoshi, to Shin-Kobe, Electric Machinery Co., Ltd.; and Shirai Denshi Kogyo Co., Ltd. Process of producing a printed wiring board. 4,243,474, Cl. 156-630.000.
Shirai, Isamu, to Sankyo Electronic Company Limited. Electromagnetic clutches. 4,243,128, Cl. 192-35.000.
Shiraki, Manabu: *See*—
Ban, Itsuki; Shiraki, Manabu; and Egami, Kazuhito, 4,243,902, Cl. 310-154.000.
Shiraki, Shigemi; and Yamamoto, Ryoichi, to Mitsui Petrochemical Industries Ltd. Apparatus for the continuous liquid-phase catalytic oxidation of alkyl-substituted aromatic compounds. 4,243,636, Cl. 422-225.000.
Shiratori, Naoyuki: *See*—
Yasujima, Akitaka; Shiratori, Naoyuki; and Ishikawa, Shingo, 4,243,882, Cl. 250-339.000.
Shirinkin, Vladimir A.: *See*—
Kruglikov, Anatoly A.; Nikolaeva, Militina A.; Vasin, Jury P.; Itkis, Zolya Y.; Shirinkin, Vladimir A.; Zimina, Ida A.; Strupinsky, Vladimir A.; and Koposov, Valery V., 4,243,780, Cl. 525-518.000.
Shook, William M., to Warner & Swasey Company, The. Hydraulic hammer mounted on a movable boom. 4,243,107, Cl. 173-43.000.
Short, Wilbur G.: *See*—
Pearson, Eugene W.; and Short, Wilbur G., 4,242,901, Cl. 72-345.000.
Short, William T., to General Motors Corporation. Moisture curing polyurethane topcoat paint with improved gloss stability. 4,243,792, Cl. 528-73.000.
Showa Denko K.K.: *See*—
Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, 4,243,492, Cl. 203-8.000.
Shroot, Braham: *See*—
Purcell, Thomas A.; Shroot, Braham; and Galtier, Daniel J. M., 4,243,665, Cl. 424-246.000.
Shubkin, Ronald L., to Ethyl Corporation. Fuel and lubricating compositions containing N-hydroxymethyl aliphatic hydrocarbylamide friction reducers. 4,243,538, Cl. 252-51.50A.
Sicard, Guy. Combustion system with partial recirculation of exhaust gases and feed mechanism therefor. 4,242,972, Cl. 110-234.000.
Siebert, Heinz: *See*—
Graalmann, Gerhard; and Siebert, Heinz, 4,243,054, Cl. 131-22.00R.
Siede, Heinz-Jurgen: *See*—
Steigerwald, Wolf-Erhard; Siede, Heinz-Jurgen; Rosner, Bela; and Zimmermann, Jurgen, 4,243,969, Cl. 338-309.000.
Siemens Aktiengesellschaft: *See*—
Aulich, Hubert; Auracher, Franz; and Witte, Hans H., 4,243,296, Cl. 350-96.150.
Gunne, Ingemar; and Almgren, Bertil, 4,243,150, Cl. 215-247.000.
Hacker, Heinz; and Helwig, Ernst, 4,243,723, Cl. 428-474.400.
Hanner, Otto, 4,243,302, Cl. 350-345.000.
Herold, Georg, 4,243,628, Cl. 264-275.000.
Kleinschmidt, Peter, 4,243,979, Cl. 340-554.000.
Knauer, Karl, 4,244,035, Cl. 365-149.000.
Kobale, Manfred; Lorenz, Hans-Peter; and Wengert, Rolf, 4,243,735, Cl. 430-25.000.
Maas, Michael, 4,243,045, Cl. 128-696.000.
Papp, Alfred; and Harms, Hauke, 4,243,936, Cl. 324-96.000.
Peche, Gerhard, 4,243,859, Cl. 200-144.00B.
Wengert, Rolf; and Huber, Wilhelm, 4,243,695, Cl. 427-14.100.
Siemens Corporation: *See*—
Holt, Dewilton R., 4,244,008, Cl. 360-45.000.
Siepmann, Walter, to Forval S.A. Valve housings made from steel, especially for gate valves. 4,243,204, Cl. 251-366.000.
SIG - Schweizerische Industrie-Gesellschaft: *See*—
Auckenthaler, Robert, 4,242,949, Cl. 493-295.000.

Sigg, Hans, to Maag Zahnrader & Maschinen AG. Marine reversing gearing. 4,242,920, Cl. 74-361.000.

Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-19,20-didehydro PG_2 compounds. 4,243,611, Cl. 568-379.000.

Sikorski, Guenter: *See*—
Boeder, Dieter; Jaeneke, Christian; Romer, Rudolf; and Sikorski, Guenter, 4,242,960, Cl. 102-92.700.

Simms, John A., to Du Pont de Nemours, E. I., and Company. Acrylic graft copolymers and coating compositions thereof. 4,243,573, Cl. 260-33.6UA.

Simms, Larry L. Icebox conversion unit. 4,242,874, Cl. 62-3.000.

Simon, Agoston; and Lengyel, Zoltan, to Chincin Gyogyszer es Vegyeszeti Termekek Gyara Rt. Process for the preparation of fermentation media suitable for culturing yeast for animal consumption and microspores and/or for the production of protein from vegetable waste matter. 4,243,685, Cl. 426-53.000.

Simpson, Jon H., to Minnesota Mining and Manufacturing Company. Sag-resistant compositions. 4,243,768, Cl. 525-127.000.

Sindelar, Karel: *See*—
Protiva, Miroslav; Rajsner, Miroslav; Sindelar, Karel; Jilek, Jiri; Bartl, Vaclav; Metysova, Jirina; Dlabac, Antonin; Langsadl, Leon; Pomykacek, Josef; and Miksik, Frantisek, 4,243,805, Cl. 544-375.000.

Singer Company, The: *See*—
Beckerman, Howard L., 4,242,974, Cl. 112-158.00E.
Beckerman, Howard L.; Pepe, Russell J.; and Dob, Allan M., 4,242,976, Cl. 112-264.100.
Brown, Jack, 4,243,919, Cl. 318-269.000.
Friedland, Bernard, 4,243,324, Cl. 356-350.000.
Jaffe, Wolfgang, 4,243,899, Cl. 310-14.000.
Knowles, Warren D.; and Coulombe, Lionel J., 4,242,975, Cl. 112-226.000.
Warner, Richard C.; and Weber, Donald J., 4,243,976, Cl. 340-347.0DD.

Singley, Ariel J. Typewriter copy holder. 4,243,335, Cl. 400-718.000.

Sinner, Bengt: *See*—
Andersson, Nils-Eric; and Sinner, Bengt, 4,243,892, Cl. 290-1.00R.

Sinor, Jerry E., to Rockwell International Corporation. Coal hydrogenation. 4,243,509, Cl. 208-8.00R.

Sipos, Sandor; Varga, Sandor; and Hali, Imre, to Kaposvari Mezogazdasagi Gepgyarto es Szolgaltato Vallalat in Kaposvar. Soil working machine. 4,243,104, Cl. 172-148.000.

Sitz, Gary E.: *See*—
Throckmorton, Peter E.; Sitz, Gary E.; and Grimm, Robert A., 4,243,612, Cl. 568-431.000.

Sizarol, Rene: *See*—
Bossuet, Jean; Godet, Jean; Guiton, Jean-Francois; Sizarol, Rene; and Waegaert, Pierre, 4,243,055, Cl. 131-76.000.

Sizelove, Cary L.; and Wells, Donald G., to Chromalloy American Corporation. Suspension for silo unloaders. 4,243,352, Cl. 414-313.000.

SKF Compagnie d'Applications Mecaniques: *See*—
Vinel, Rene; Querton, Jean-Pierre; and Serville, Claude, 4,243,130, Cl. 192-98.000.

Skinner, Wilfred A.; and Takenishi, Shigeyuki, to SRI International. Production of increased yields of cellulolytic enzymes from *Thielavia terrestris* and separating methods therefor. 4,243,752, Cl. 435-209.000.

Skrodzki, Chester: *See*—
Carlock, Gaylord W.; McKeown, William L.; Goodman, James R.; and Skrodzki, Chester, 4,243,358, Cl. 416-114.000.

Skubich, Otto; Perkert, Rudolf; and Fischer, Karl Heinz, to Massey-Ferguson Services N.V. Device for setting blade of earthmover. 4,243,106, Cl. 172-804.000.

Sladkov, Viktor I.: *See*—
Nazarian, Artashes R.; Kremlev, Vyacheslav Y.; Kokin, Vilyam N.; Sladkov, Viktor I.; Venkov, Boris V.; and Lavrov, Vadim V., 4,243,895, Cl. 307-205.000.

Slanina, George L.: *See*—
Moeller, Chris R.; and Slanina, George L., 4,243,174, Cl. 236-46.00R.

Slotnick, Barry G.: *See*—
Crockett, Thomas W.; Huehls, Patrick N.; and Slotnick, Barry G., 4,243,531, Cl. 210-188.000.

Smetana, Andrew: *See*—
Kewley, Norman E.; and Smetana, Andrew, 4,243,371, Cl. 431-13.000.

Smith, Charles E. Hydro-power generation systems. 4,242,868, Cl. 60-496.000.

Smith, Donald F.; and Ostrelich, Michael J., to General Electric Company. Dead front plug with insulation penetrating contacts. 4,243,287, Cl. 339-99.00R.

Smith, Ernest L., to Phillips Petroleum Company. Combination container and feeder. 4,242,984, Cl. 119-52.00R.

Smith & Nephew Research Limited: *See*—
Potter, William D., 4,243,567, Cl. 260-29.6MM.

Smith, Norma J. Fecal impaction remover. 4,243,037, Cl. 128-303.00R.

Smith, Oliver W.: *See*—
Koleske, Joseph V.; Knopf, Robert J.; and Smith, Oliver W., 4,243,569, Cl. 260-29.6TA.

Smith, Wallace A.: *See*—
Delfino, Michaelangelo; Gentile, Philip S.; Loiacono, Gabriel M.; and Smith, Wallace A., 4,243,642, Cl. 423-277.000.

Smith, Wyatt B., to Reddig, Doyle A., a part interest. Fishing lure. 4,242,827, Cl. 43-42.100.

Smiths Industries: *See*—
Morris, Kenneth J., 4,242,840, Cl. 51-236.000.

Snamprogetti S.p.A.: *See*—
Mancini, Giuseppe; and Imparato, Luigi, 4,243,540, Cl. 252-56.00S.
Marconi, Walter; Pittalis, Francesco; Bartoli, Francesco; and Morisi, Franco, 4,243,776, Cl. 525-420.000.

Snowden, Donald P.: *See*—
Lukens, Herbert R., Jr.; Snowden, Donald P.; and Voigt, Richard L., 4,243,644, Cl. 423-352.000.

Sobotta, Werner, to Vereinigte Flugtechnische Werke-Fokker GmbH. Aircraft control system. 4,243,922, Cl. 318-561.000.

Societe Anonyme de Techniques Audio-Visuelles S.A.T.A.V.: *See*—
Renoux, Robert A., 4,243,367, Cl. 425-385.000.

Societe Anonyme de Telecommunications: *See*—
Arnaud, Claude J.; Quemner, Jean M.; and Roche, Gaston P., 4,243,773, Cl. 525-387.000.
Brouard, Germain G.; and Molleron, Claude A., 4,244,046, Cl. 370-62.000.

Societe Anonyme dite: INTERLIGHT: *See*—
Hocq, Robert, 4,243,337, Cl. 401-132.000.

Societe Anonyme dite: Vacuum Capatainer International: *See*—
Fagniart, Gaston; and Lemaire, Jean-Pierre, 4,243,448, Cl. 156-73.500.

Societe Anonyme Francaise du Ferodo: *See*—
Jeanson, Rene H., 4,242,816, Cl. 37-67.000.

Societe de Vente de l'Aluminium Pechiney: *See*—
Rauch, Joseph, 4,243,439, Cl. 148-20.600.

Societe Francaise des Produits pour Catalyse: *See*—
Martino, Germain; and Miquel, Jean, 4,243,516, Cl. 208-139.000.

Societe Franco-Americaine de Constructions Atomiques-Framatome: *See*—
Chabin, Michel, 4,243,485, Cl. 176-37.000.

Societe Nationale des Poudres et Explosifs: *See*—
Boileau, Sylvie L.; Caubere, Paul J.; Ndebeka, Gilberte; Lecolier, Serge L.; and Raynal, Serge F., 4,243,787, Cl. 526-180.000.

Soini, Erkki: *See*—
Ekins, Roger P.; and Soini, Erkki, 4,243,880, Cl. 250-252.000.

Solheim, Odd E.: *See*—
Vareide, Dag; and Solheim, Odd E., 4,243,380, Cl. 432-15.000.

Solvay & Cie.: *See*—
Nicolas, Edgard; and Bourgeois, Louis, 4,243,497, Cl. 204-98.000.
Petit, Andre, 4,243,562, Cl. 260-17.00A.

Soma, Tsunenori: *See*—
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.

Sommer, Richard; Wolfrum, Gerhard; and Buttner, Gerhard, to Bayer Aktiengesellschaft. Monoazo dyestuffs containing diazo component substituted by disulfimide and trifluoromethyl groups. 4,243,584, Cl. 260-165.000.

Sorokin, Peter P.: *See*—
Bethune, Donald S.; Lankard, John R.; Loy, Michael M.; and Sorokin, Peter P., 4,243,881, Cl. 250-338.000.

Sotnikov, Ivan A.: *See*—
Lipets, Adolf U.; Krasnov, Boleslav M.; Sotnikov, Ivan A.; Fedosov, Alexei Z.; Galuskin, Vadim B.; Lafa, Jury I.; Alexandrov, Boris I.; and Gromov, Gennady V., 4,243,096, Cl. 165-134.0DP.

Southwire Company: *See*—
Pariani, Ronald L.; and Arp, David F., 4,243,209, Cl. 266-219.000.

Sovak, Milos; and Ranganathan, Ramachandra, to University of California, The Regents of the. Non-ionic polyiodo sugar substituted anilines. 4,243,653, Cl. 424-5.000.

Spaargaren, Robert; and DiMatteo, Albert, to Chrysler Corporation. Self-adjusting drum brake. 4,243,125, Cl. 188-79.50P.

Spatz Corporation: *See*—
Spatz, Walter B., 4,243,159, Cl. 222-188.000.

Spatz, Walter B., to Spatz Corporation. Pump devices for dispensing fluids. 4,243,159, Cl. 222-188.000.

Spector, Donald. Scratch and smell puzzle. 4,243,224, Cl. 273-157.00R.

Spector, George: *See*—
Goon, Harry; and Spector, George, 4,243,013, Cl. 126-43.000.

Speidel, Blasius. Deflation valve for blood pressure measuring device. 4,243,201, Cl. 251-297.000.

Sperry Corporation: *See*—
Bennett, Virgil O.; and Wilson, George W., 4,242,917, Cl. 74-5.500.
Parrish, Charles A.; and Jennings, Richard E., 4,242,857, Cl. 56-341.000.

Sperry, Peter R.; and Wiersema, Richard J., to Rohm and Haas Company. Pigment dispersant for aqueous paints. 4,243,430, Cl. 106-308.00M.

Spilburg, Curtis A.; and Schuck, James M., to Monsanto Company. Novel glycoproteins from bovine cartilage. 4,243,582, Cl. 260-112.00R.

Spitzer, Wayne A.; and Goodson, Theodore, Jr., to Eli Lilly and Company. Process for novel oxazolinoazetidinones. 4,243,588, Cl. 260-245.400.

Split Cycle Energy Systems, Inc.: *See*—
Brinkerhoff, VerDon C., 4,242,878, Cl. 62-119.000.

SPOFA, spojene podniky pro zdravotnickou vyrobu: *See*—
Protiva, Miroslav; Rajsner, Miroslav; Sindelar, Karel; Jilek, Jiri; Bartl, Vaclav; Metysova, Jirina; Dlabac, Antonin; Langsadl, Leon; Pomykacek, Josef; and Miksik, Frantisek, 4,243,805, Cl. 544-375.000.

Sprague Electric Company: *See*—
Lintott, David A., 4,244,010, Cl. 361-433.000.

Sprenger, Martin:: *See*—
Bogner, Karl-Heinz; and Sprenger, Martin;, 4,243,964, Cl. 335-156.000.

Sprengling, Gerhard R.; and Cargnel, Louis A., to Westinghouse Electric Corp. Method of encapsulating electrical apparatus. 4,243,623, Cl. 264-69.000.
Sprunck, Emile J.: *See—*
Leroy, Pierre J.; Bastien, Jean P.; and Sprunck, Emile J., 4,243,211, Cl. 266-268.000.
SRI International: *See—*
Skinner, Wilfred A.; and Takenishi, Shigeyuki, 4,243,752, Cl. 435-209.000.
Srogi, Ladislaw G. Mechanical propulsion system. 4,242,918, Cl. 74-84.00S.
Stach, Kurt, deceased: *See—*
Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; and Plattner, Werner, administrator, 4,243,807, Cl. 546-232.000.
Staerzl, Richard E., to Brunswick Corporation. Detonation control apparatus for outboard motor. 4,243,009, Cl. 123-435.000.
Standard Oil Company: *See—*
Wiggins, Wayne T., 4,243,707, Cl. 427-388.400.
Wiggins, Wayne T.; and Gerry, Frank S., 4,243,725, Cl. 428-517.000.
Stang, John H.; and Johnson, Kenneth A., to Cummins Engine Company, Inc. Insulated composite piston. 4,242,948, Cl. 92-212.000.
Stanley Works, The: *See—*
Rollband, Ernest J.; and West, Robert F., 4,242,795, Cl. 30-162.000.
Star Seimitsu Kabushiki Kaisha: *See—*
Shigemori, Youjiro, 4,243,334, Cl. 400-247.000.
Stauffer Chemical Company: *See—*
Teach, Eugene G., 4,243,811, Cl. 548-215.000.
Staver, Anatoly M.: *See—*
Deribas, Andrei A.; Limasov, Alexei I.; Matytsin, Alexei I.; Staver, Anatoly M.; Shebalin, Rudolf I.; and Yashin, Jury N., 4,242,787, Cl. 29-421.00E.
Steckler, Steven A.: *See—*
Balaban, Alvin R.; and Steckler, Steven A., 4,243,953, Cl. 331-117.00R.
Steffl, Robert J.: *See—*
Vogel, Lambert P.; and Steffl, Robert J., 4,243,105, Cl. 172-311.000.
Stefko, Bela: *See—*
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefko, Bela; and Kis-Tamas, Attila, 4,243,660, Cl. 424-84.000.
Steigerwald, Robert L., to General Electric Company. Third harmonic auxiliary commutated inverter having selectable commutation capacitance as a function of load current. 4,244,017, Cl. 363-138.000.
Steigerwald, Wolf-Erhard; Siede, Heinz-Jurgen; Rosner, Bela; and Zimmermann, Jurgen, to PREH, Elektrofeinmechanische Werke Jakob Preh Nachf. GmbH & Co. Layer resistor element. 4,243,969, Cl. 338-309.000.
Steinbrecher, Heinrich: *See—*
von Dorp, Walter; and Steinbrecher, Heinrich, 4,242,894, Cl. 72-96.000.
Steinwart, Johannes: *See—*
Freyer, Erwin; Steinwart, Johannes; and Will, Peter, 4,243,002, Cl. 123-325.000.
Sten, Nathan, to Aktiebolaget Electrolux. Supplemental cooling system for portable electric power plants. 4,243,893, Cl. 290-1.00B.
Stephan, Michael: *See—*
Schwarz, Alois; Mautz, Karlheinz; and Stephan, Michael, 4,243,359, Cl. 416-138.000.
Sterling Drug Inc.: *See—*
Margulies, Herman, 4,243,144, Cl. 206-532.000.
Rubey, Robert J., 4,243,067, Cl. 137-329.030.
Schmidt, Paul J.; and Hung, William M., 4,243,250, Cl. 282-27.500.
Sterling Manufacturing, Inc.: *See—*
Lindee, Scott A., 4,243,466, Cl. 156-363.000.
Stewart, Donald A.: *See—*
Clapp, Keith A.; and Stewart, Donald A., 4,243,347, Cl. 407-15.000.
Stewart, James F.: *See—*
Bowe, Gerald R.; and Stewart, James F., 4,243,314, Cl. 355-29.000.
Stewart, Maurice M., to Oxygen Therapy Institute, Inc. Valving and automatic pressure regulator for inhalation apparatus. 4,243,155, Cl. 222-3.000.
Stewart, Wilber C.: *See—*
Mezrich, Reuben S.; and Stewart, Wilber C., 4,242,913, Cl. 73-626.000.
Stimtech, Inc.: *See—*
Bailey, William D., 4,243,052, Cl. 128-798.000.
Stiot, Jean-Pierre H.: *See—*
Bourdauducq, Paul M. C.; Brouard, Claude M. H. E.; Moerel, Claude L. E.; and Stiot, Jean-Pierre H., 4,243,606, Cl. 260-465.00D.
Stohr, Michael, to Deutsches Krebsforschungszentrum. Fluorescence analysis of stained particles. 4,243,318, Cl. 356-39.000.
Stoltz, Andries J., to C.W.M. Du Toit Beleggings (Eiendoms) Beperk. Acceleration monitoring system. 4,242,910, Cl. 73-516.0LM.
Stone, Derek J.: *See—*
Peter, Jack; Offerman, Karl B.; Brown, Larry D.; and Stone, Derek J., 4,243,186, Cl. 242-195.000.
Stork, Gilbert: *See—*
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,243,823, Cl. 568-824.000.
Strandwitz, Peter, to Cornelius Company, The. Touch switch and contactor therefor. 4,243,861, Cl. 200-159.00B.
Strauss, William A., to Oil Recovery Systems, Inc. Oil collecting apparatus. 4,243,529, Cl. 210-109.000.
Strongin, Ned. Disc projecting game. 4,243,227, Cl. 273-357.000.
Strupinsky, Vladimir A.: *See—*
Kruglikov, Anatoly A.; Nikolaeva, Militina A.; Vasin, Jury P.; Itkis, Zolya Y.; Shirinkin, Vladimir A.; Zimina, Ida A.; Strupinsky, Vladimir A.; and Koposov, Valery V., 4,243,780, Cl. 525-518.000.
Strutzel, Hans; Hoheisel, Klaus; and Janocha, Siegfried, to Hoechst Aktiengesellschaft. Tubular packaging material, preferably for use as a sausage casing. 4,243,074, Cl. 138-118.100.
Strutzel, Hans; Hoheisel, Klaus; and Janocha, Siegfried, to Hoechst Aktiengesellschaft. Thermoplastic multi-layer film. 4,243,724, Cl. 428-474.700.
Stuhmer, Werner: *See—*
Milkowski, Wolfgang; Budden, Renke; Funke, Siegfried; Huschens, Rolf; Liepmann, Hans-Gunther; Stuhmer, Werner; and Zeugner, Horst, 4,243,585, Cl. 260-239.0BD.
Su, Jui-Lieh. Plastics moulding machine. 4,242,944, Cl. 92-2.000.
Suchanski, Mary R.: *See—*
Lieb, Donald F.; and Suchanski, Mary R., 4,243,503, Cl. 204-290.00F.
Suchowerskyj, Wadym; Seibel, Berthold; and Werner, Peter, to Robert Bosch GmbH. Test circuit for automotive passenger restraint systems. 4,243,971, Cl. 340-52.00H.
Suga, Nagaichi. Carbon electrode for arc lamp. 4,243,833, Cl. 13-18.00C.
Sugawara, Minoru, to Ishino Gasket Mfg. Co., Ltd. Gasket reinforced by grommet in combination with graphite sheet. 4,243,231, Cl. 277-22.000.
Sugda, Peter J.; and Thompson, Thomas G. Sewer chimney. 4,243,068, Cl. 137-363.000.
Sugimura, Hidehiko; and Koba, Keichiro, to Mitsui Coke Co., Ltd. Coke compositions and process for manufacturing same. 4,243,488, Cl. 201-6.000.
Sulzer Brothers Limited: *See—*
Quack, Hans; and Senn, Armin E., 4,242,885, Cl. 62-500.000.
Sumitomo Aluminium Smelting Co., Ltd.: *See—*
Yanagida, Kiyomi; Magusa, Harumi; and Takahashi, Akihiko, 4,243,438, Cl. 148-11.50A.
Sumitomo Chemical Co., Ltd.: *See—*
Shiga, Akinobu; Fukui, Yoshiharu; Matsumura, Kazuhiro; Sasaki, Toshio; and Okawa, Masahisa, 4,243,786, Cl. 526-137.000.
Sumitomo Metal Industries, Ltd.: *See—*
Takigawa, Toshiji; and Kida, Junichi, 4,242,781, Cl. 29-113.0AD.
Summagraphics Corporation: *See—*
Rocheleau, Richard T., 4,243,843, Cl. 178-19.000.
Sun, Jui-Yuan: *See—*
Burk, Emmett H.; Yoo, Jin S.; Karch, John A.; and Sun, Jui-Yuan, 4,243,550, Cl. 252-412.000.
Sunakawa, Makoto: *See—*
Hori, Yutaka; Takahashi, Hidekazu; Sunakawa, Makoto; Ijichi, Ichiro; and Kamei, Kiyohiro, 4,243,462, Cl. 156-310.000.
Sunder, Sham: *See—*
Searingen, Judson S.; and Sunder, Sham, 4,242,870, Cl. 60-651.000.
Surakka, Jorma: *See—*
Savolainen, Jaakko; Engdahl, Holger; Luukkainen, Yrjo; Tolvanen, Martti; and Surakka, Jorma, 4,243,533, Cl. 210-247.000.
Susquehanna Broadcasting Co.: *See—*
Helgesen, Paul E., 4,243,873, Cl. 219-386.000.
Suttles, James M.; Norton, Terry L.; Hart, Joseph P.; and Jordan, Thomas C., III, to Royston Manufacturing Corporation. Free-standing article support unit. 4,242,970, Cl. 108-159.000.
Sutyagin, Oleg Y.: *See—*
Galimov, Anas G.; Gelfand, Mikhail L.; Goldshtein, Boris G.; Kilin, Viktor E.; Sutyagin, Oleg Y.; Tsipenjuk, Yakov I.; Antipov, Georgy A.; and Yankovsky, Oleg A., 4,243,108, Cl. 173-93.000.
Suzuki, Takeshi; Murao, Mikio; Uchida, Masahiro; and Nezuka, Minoru, to Kawasaki Jukogyo Kabushiki Kaisha. Material distributing means for rotary drum type heat treatment apparatus. 4,243,382, Cl. 432-78.000.
Suzuki, Takeshi: *See—*
Tatemoto, Masayoshi; Suzuki, Takeshi; Tomoda, Masayasu; Furukawa, Yasuyoshi; and Ueta, Yutaka, 4,243,770, Cl. 525-331.000.
Suzuki, Yasoji: *See—*
Masuda, Eiji; and Suzuki, Yasoji, 4,243,975, Cl. 340-347.0NT.
Swain, Richard S., to Norlin Industries, Inc. Automatic rhythm generator. 4,242,936, Cl. 84-1.030.
Swan, Jack C., Jr., to Hanson Industries Incorporated. Viscous, flowable, pressure-compensating fitting compositions. 4,243,754, Cl. 521-55.000.
Swartz, Jeffrey L., to Microseal Plastics Corporation. Process for sealing a plurality of polybutylene sheets. 4,243,449, Cl. 156-82.000.
Swartz, Mitchell R., to Massachusetts Institute of Technology. Electrochemical process and apparatus to control the chemical state of a material. 4,243,751, Cl. 435-168.000.
Sweeney, W. Alan, to Chevron Research Company. Polypyrrolidone alloys. 4,243,777, Cl. 525-425.000.
Swift, William R.; and LeFevre, Clyde E., to AM International, Inc. Microfiche carrier assembly. 4,242,819, Cl. 40-513.000.
Swiss Aluminium Ltd.: *See—*
Kugler, Tibor, 4,243,502, Cl. 204-243.00R.
Sybron Corporation: *See—*
Tandon, Dinesh C., 4,243,412, Cl. 75-171.000.
Synthelabo: *See—*
Purcell, Thomas A.; Shroot, Braham; and Galtier, Daniel J. M., 4,243,665, Cl. 424-246.000.

Syva Company: *See*—
Schneider, Richard S.; and Gould, Steven J., 4,243,654, Cl. 424-12.000.

Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefko, Bela; and Kis-Tamas, Attila, to Egyt Gyogyszervegyeszeti Gyar. Composite insect attractant for male cabbage moths and a process for preparing its active agents. 4,243,660, Cl. 424-84.000.

Tahara, Yukio: *See*—
Kosaka, Takao; and Tahara, Yukio, 4,243,716, Cl. 428-327.000.

Taiho Pharmaceutical Company: *See*—
Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,243,812, Cl. 548-248.000.

Taillades, Jacques: *See*—
Pascal, Robert; Lasperas nee Marnier, Monique; Rousset, Alain; Commeyras, Auguste; Taillades, Jacques; and Mion, Louis, 4,243,814, Cl. 548-344.000.

Takada, Shunji: *See*—
Mifune, Hiroyuki; Takada, Shunji; Akimura, Yoshitaka; and Hirano, Shigeo, 4,243,739, Cl. 430-266.000.

Takahashi, Akihiko: *See*—
Yanagida, Kiyomi; Magusa, Harumi; and Takahashi, Akihiko, 4,243,438, Cl. 148-11.50A.

Takahashi, Hidekazu: *See*—
Hori, Yutaka; Takahashi, Hidekazu; Sunakawa, Makoto; Ijichi, Ichiro; and Kamei, Kiyohiro, 4,243,462, Cl. 156-310.000.

Takahashi, Hiroshi: *See*—
Kokeguchi, Sadao; Takahashi, Hiroshi; Okada, Ken; and Murakami, Sanpei, 4,243,689, Cl. 426-557.000.
Murakami, Sanpei; Kokeguchi, Sadao; Takahashi, Hiroshi; and Okada, Ken, 4,243,690, Cl. 426-557.000.

Takahashi, Kenichi; Fukuyama, Tatsuo; Ueno, Takafumi; Shimada, Yasuomi; and Ishii, Shinichiro, to Matsushita Electric Industrial Co., Ltd. Transducer with flux sensing coils. 4,243,839, Cl. 179-1.00F.

Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, to Nippon Piston Ring Co., Ltd. Slidable members for prime movers. 4,243,414, Cl. 75-244.000.

Takahashi, Masamitsu, to Bankoku Needle Manufacturing Company Ltd. Needle pack. 4,243,141, Cl. 206-380.000.

Takai, Norihira: *See*—
Mori, Masaaki; Ogawa, Tamotu; and Takai, Norihira, 4,243,621, Cl. 264-65.000.

Takamizawa, Minoru; Okamoto, Haruo; Umemura, Mitsuo; and Kooya, Kazuo, to Shin-Etsu Chemical Co. Ltd. Process for the preparation of tetrachloroalkanes. 4,243,607, Cl. 570-257.000.

Takashima, Masaru, to Aikoh Co. Ltd. Tundish for the continuous casting of steel. 4,243,210, Cl. 266-220.000.

Takeda, Takako: *See*—
Isogai, Nobuo; Okawa, Takashi; and Takeda, Takako, 4,243,599, Cl. 260-348.250.

Takehara, Yasuo: *See*—
Miyakoshi, Isamu; Ito, Kenji; Azuma, Hideo; Kitakaze, Fukuzo; Tomotaki, Takamichi; and Takehara, Yasuo, 4,243,132, Cl. 193-40.000.

Takenishi, Shigeyuki: *See*—
Skinner, Wilfred A.; and Takenishi, Shigeyuki, 4,243,752, Cl. 435-209.000.

Takenoya, Hideaki: *See*—
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kakinuma, Toshihide; and Kume, Toshiaki, 4,242,973, Cl. 112-158.00E.

Takeshita, Masajiro: *See*—
Takahashi, Kentaro; Nakamura, Yoshikatsu; and Takeshita, Masajiro, 4,243,414, Cl. 75-244.000.

Takeuchi, Hiroshi; Ito, Yukio; Jyomura, Shigeru; Yamashita, Kunio; Nagatsuma, Kazuyuki; Ashida, Sakichi; and Ishii, Mitsuru, to Hitachi, Ltd. Piezoelectric ceramics. 4,243,541, Cl. 252-62.900.

Takigawa, Toshiji; and Kida, Junichi, to Sumitomo Metal Industries, Ltd. Variable crown sleeve roll. 4,242,781, Cl. 29-113.0AD.

Takojima, Hyoichi, to Caterpillar Mitsubishi Ltd. Quick coupler. 4,243,356, Cl. 414-723.000.

Tamura, Hideo; and Ibuki, Seiro, to Kubota Ltd. Process for producing tobermorite and ettringite. 4,243,429, Cl. 106-306.000.

Tamura, Masaaki; and Tanaka, Shigeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Digital servo system for rotating member. 4,243,921, Cl. 318-314.000.

Tanaka, Keihachiro: *See*—
Ohsato, Nobuyoshi; Tanaka, Keihachiro; and Mizushima, Eiji, 4,243,400, Cl. 65-16.000.

Tanaka, Motoaki: *See*—
Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,243,812, Cl. 548-248.000.

Tanaka, Shigeo: *See*—
Tamura, Masaaki; and Tanaka, Shigeo, 4,243,921, Cl. 318-314.000.

Tanaka, Yoshikatsu: *See*—
Shirai, Haruo; Tanaka, Yoshikatsu; Kosuga, Zinzo; and Osaka, Kiyoshi, 4,243,474, Cl. 156-630.000.

Tandon, Dinesh C., to Sybron Corporation. Dental alloy. 4,243,412, Cl. 75-171.000.

Tatemoto, Masayoshi; Suzuki, Takeshi; Tomoda, Masayasu; Furukawa, Yasuyoshi; and Ueta, Yutaka, to Daikin Kogyo Co., Ltd. Cross linkable fluorine-containing polymer and its production. 4,243,770, Cl. 525-331.000.

Taylor, Harry H.: *See*—
Chill, James L.; Taylor, Harry H.; and Granger, Evertt H., 4,243,437, Cl. 148-11.50C.

Taylor, Henry F.: *See*—
Richards, William E.; and Taylor, Henry F., 4,243,300, Cl. 350-150.000.

Taylor, James L., to Thompson-Hayward Chemical Company. Method of reducing infestation of citrus rust mites on citrus trees. 4,243,680, Cl. 424-322.000.

Taylor, Thomas, to Lever Brothers Company. Production of aluminosilicate-containing detergent composition. 4,243,544, Cl. 252-135.000.

Te ka De Felten & Guilleaume Fernmeldeanlagen GmbH: *See*—
Schmidt, Hans-Joachim, 4,243,957, Cl. 333-28.00R.

TEAC Corporation: *See*—
Utsumi, Yoshihiro, 4,243,848, Cl. 369-45.000.

Teach, Eugene G., to Stauffer Chemical Company. 2,2,4-Trimethyl-4-hydroxymethyl-3-dichloroacetyl oxazolidine. 4,243,811, Cl. 548-215.000.

Tektronix, Inc.: *See*—
Wilde, Doran K., 4,243,958, Cl. 333-165.000.

Teldix GmbH: *See*—
Wehde, Heinz; Wulfhorst, Burkhard; and Schumann, Fritz, 4,242,860, Cl. 57-81.000.

Teledyne Industries, Inc.: *See*—
Kates, James M., 4,243,840, Cl. 179-1.00D.

Telic Corporation: *See*—
Penfold, Alan S., 4,243,505, Cl. 204-298.000.

Tennant, Jerald L. Posterior encapsuled implant lens. 4,242,762, Cl. 3-13.000.

Ter-Borch, Poul E.; Baumgarten, Per; and Jorgensen, Ernst K., to I. Kruger A/S. Method and apparatus for utilizing heat content in waste water. 4,243,522, Cl. 210-774.000.

Tessler, Martin M., to National Starch and Chemical Corporation. Novel starch ether derivatives, a method for the preparation thereof and their use in paper. 4,243,479, Cl. 162-175.000.

Tetra Pak Developpement SA: *See*—
Ignell, Rolf L., 4,243,152, Cl. 220-270.000.
Reil, Wilhelm, 4,243,160, Cl. 222-373.000.

Texaco Development Corporation: *See*—
McDaniel, Kenneth G.; Rice, Doris M.; and Cuscurida, Michael, 4,243,760, Cl. 521-176.000.

Texaco Inc.: *See*—
Elliott, Lloyd E., Jr.; and Hudson, John L., 4,243,116, Cl. 181-118.000.
Kliesch, Howard C.; McWilliams, Daniel N.; Pratt, Roy E.; and Schmude, Donald H., 4,243,630, Cl. 422-62.000.

Texaco Trinidad, Inc.: *See*—
Ali, Wahid R., 4,243,676, Cl. 424-294.000.

Texas Instruments Incorporated: *See*—
Ackley, David A.; Rogers, Gerald D.; Macourek, Peter H.; Guttag, Karl M.; and Chang, Ki Suk, 4,243,984, Cl. 340-703.000.

Textron: *See*—
Carlock, Gaylord W.; McKeown, William L.; Goodman, James R.; and Skrodzki, Chester, 4,243,358, Cl. 416-114.000.

Th. Goldschmidt AG: *See*—
Brugger, Wilhelm, 4,243,649, Cl. 423-608.000.

Tharp, Charles E.; and Campbell, Clark M., to Environmental Dynamics, Inc. Method and apparatus for aerobically treating wastewater. 4,243,521, Cl. 210-626.000.

Theodoropulos, Spyros: *See*—
Eisenhardt, William A., Jr.; Hedaya, Eddie; and Theodoropulos, Spyros, 4,243,605, Cl. 556-414.000.

Therm-O-Disc Incorporated: *See*—
Place, Donald E., 4,243,858, Cl. 200-83.00P.

Thiboutot, Robert, to Les Entreprises Rotot Ltee. Collapsible support structure and devices formed therefrom. 4,243,263, Cl. 297-42.000.

Thiel, Max: *See*—
Friebe, Walter-Gunar; Thiel, Max; Stach, Kurt, deceased; and Plattner, Werner, administrator, 4,243,807, Cl. 546-232.000.

Thompson-Hayward Chemical Company: *See*—
Taylor, James L., 4,243,680, Cl. 424-322.000.

Thompson, Thomas G.: *See*—
Sugda, Peter J.; and Thompson, Thomas G., 4,243,068, Cl. 137-363.000.

Thomson-CSF: *See*—
Albarello, Alain, 4,244,030, Cl. 364-825.000.
Delory, Bernard; Fleury, Georges; and Kuntzmann, Jean-Claude, 4,243,914, Cl. 315-3.500.
Faillon, Georges; and Carreyve, Claude, 4,243,961, Cl. 333-233.000.
Fleury, Georges, 4,243,915, Cl. 315-3.500.

Thornton, Douglas S.: *See*—
Hernandez, Henry R.; Greif, Donald S.; Barna, Albert N.; and Thornton, Douglas S., 4,243,480, Cl. 162-141.000.

Thorstensson, Gustav Y.: *See*—
Tisell, Claes-Gustav E. Y.; Lundell, Karl E. B.; Horner, Sven H. N.; Thorstensson, Gustav Y.; and Karlstedt, Gustav S. E., 4,242,945, Cl. 92-26.000.

Throckmorton, Peter E.; Sitz, Gary E.; and Grimm, Robert A., to Ashland Oil, Inc. Benzylic oxidation process. 4,243,612, Cl. 568-431.000.

Thrun, Robert H., to Anchor Products Company. Surgical needle and sharps holding container. 4,243,140, Cl. 206-380.000.

Tisell, Claes-Gustav E. Y.; Lundell, Karl E. B.; Horner, Sven H. N.; Thorstensson, Gustav Y.; and Karlstedt, Gustav S. E., to Forenade Fabriksverken. Assembly with relatively displaceable members. 4,242,945, Cl. 92-26.000.

TMC Corporation: *See*—
Krob, Erwin, 4,243,245, Cl. 280-626.000.

Toda, Tadayoshi; Omote, Kazuaki; and Imai, Mamoru, to Nissan Motor Company, Limited. Construction for mounting inside rear view mirror in motor vehicle. 4,243,196, Cl. 248-475.00R.

Tohyama, Yoshikuni; Kimura, Yoshimasa; Ishida, Masato; and Miyamoto, Koichi, to Canon Kabushiki Kaisha. Image forming apparatus. 4,243,311, Cl. 355-8.000.

Tokar, Joseph C.; and Janezich, Frank A., to Donaldson Company, Inc. Air cleaner with replaceable filter element. 4,243,397, Cl. 55-487.000.

Tokico Ltd.: *See*—
Amemori, Hiroyuki; and Nishiyama, Shigeru, 4,242,916, Cl. 73-861.830.
Sakazume, Takeshi, 4,242,869, Cl. 60-594.000.

Tokunaga, Yasuo; and Yamada, Kiyoshige, to Toyo Kogyo Co., Ltd. Rear window structure for automobile. 4,243,262, Cl. 296-146.000.

Tokyo Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
Masujima, Sho; and Yoshihito, Yamamoto, 4,243,139, Cl. 206-330.000.

Tokyo Ohka Kogyo Kabushiki Kaisha: *See*—
Tsuda, Minoru; Nakamura, Yoichi; Nagata, Hideo; and Nakane, Hisashi, 4,243,740, Cl. 430-270.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Masuda, Eiji; and Suzuki, Yasoji, 4,243,975, Cl. 340-347.0NT.
Tamura, Masaaki; and Tanaka, Shigeo, 4,243,921, Cl. 318-314.000.
Tsuji, Teruaki; and Watanabe, Shigeru, 4,243,484, Cl. 176-30.000.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Azuma, Makoto; and Nakagawa, Akio, 4,243,999, Cl. 357-38.000.
Natori, Kenji; and Masuoka, Fujio, 4,243,997, Cl. 357-23.000.
Niida, Hideo, 4,242,880, Cl. 62-200.000.
Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, 4,243,308, Cl. 354-60.00E.

Toledo-Pereyra, Luis H., to Henry Ford Hospital. Liver preservation. 4,242,883, Cl. 62-306.000.

Toliusis, Vytautas J., to Humphrey Products Company. Fluid pressure cylinder convertible for use with or without internal bumpers. 4,242,946, Cl. 92-59.000.

Tolvanen, Martti: *See*—
Savolainen, Jaakko; Engdahl, Holger; Luukkainen, Yrjo; Tolvanen, Martti; and Surakka, Jorma, 4,243,533, Cl. 210-247.000.

Tombach, Ivar, to Aerovironment Inc. Particulate sampler shield. 4,242,908, Cl. 73-421.50R.

Tomiita, Kazuo: *See*—
Negishi, Takao; and Tomiita, Kazuo, 4,242,862, Cl. 57-287.000.

Tomizawa, Masaharu: *See*—
Hozuma, Hiroshi; Ohwada, Hisatoshi; Tomizawa, Masaharu; Sanada, Seiki; and Kikuchi, Hideo, 4,243,633, Cl. 422-129.000.

Tomoda, Masayasu: *See*—
Tatemoto, Masayoshi; Suzuki, Takeshi; Tomoda, Masayasu; Furukawa, Yasuyoshi; and Ueta, Yutaka, 4,243,770, Cl. 525-331.000.

Tomotaki, Takamichi: *See*—
Miyakoshi, Isamu; Ito, Kenji; Azuma, Hideo; Kitakaze, Fukuzo; Tomotaki, Takamichi; and Takehara, Yasuo, 4,243,132, Cl. 193-40.000.

Toray Industries, Inc.: *See*—
Hiramoto, Hiroo; and Eguchi, Masuichi, 4,243,743, Cl. 430-281.000.
Negishi, Takao; and Tomiita, Kazuo, 4,242,862, Cl. 57-287.000.

Toray Silicone Company, Ltd.: *See*—
Mine, Katsutoshi, 4,243,542, Cl. 260-375.00B.

Toro Company, The: *See*—
Kendall, Thomas L., 4,244,022, Cl. 364-420.000.

Tosco Corporation: *See*—
Haas, Frank C.; and Hesse, William K., 4,243,639, Cl. 423-63.000.

Toshiba Ceramics Co., Ltd.: *See*—
Mori, Masaaki; Ogawa, Tamotu; and Takai, Norihira, 4,243,621, Cl. 264-65.000.

Toshiba Silicone Co. Ltd.: *See*—
Murai, Bunjiro; and Matsumoto, Yasuji, 4,243,718, Cl. 428-411.000.

Toth, Miklos: *See*—
Szantay, Csaba; Novak, Lajos; Toth, Miklos; Balla, Jozsef; Stefko, Bela; and Kis-Tamas, Attila, 4,243,660, Cl. 424-84.000.

Toth, William L., to W. S. Rockwell Company. Method of making a particle-containing plastic coating. 4,243,696, Cl. 427-27.000.

Toussaint, Stephen M., to Esmark, Incorporated. Method of and apparatus for signature coded target recognition. 4,243,972, Cl. 340-146.3SY.

Towmotor Corporation: *See*—
Blaha, James G., 4,243,234, Cl. 277-84.000.

Toyo Kogyo Co., Ltd.: *See*—
Tokunaga, Yasuo; and Yamada, Kiyoshige, 4,243,262, Cl. 296-146.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Inoue, Tokuta; Oishi, Kiyohiko; and Kobashi, Kiyoshi, 4,242,997, Cl. 123-568.000.
Komeiji, Shigeki; Futamura, Yoshisumi; Mizobe, Tsugio; Okayama, Morio; and Iwasaki, Isao, 4,242,888, Cl. 64-21.000.
Motonami, Masanao; Yasumatsu, Jun; and Tsujiuchi, Yoshio, 4,243,185, Cl. 242-107.200.
Nakamura, Akira; and Oguri, Masato, 4,242,943, Cl. 91-369.00A.
Nishikawa, Kazuyoshi; and Uno, Makoto, 4,242,923, Cl. 74-700.000.
Onishi, Sigeru, 4,242,993, Cl. 123-59.00B.

Tramezzani, Gicancarlo, to P.W.T. Plastic World Technology Limited. Method and apparatus for the continuous extrusion and blowing of thin films of plastic material in particular rigid PVC. 4,243,629, Cl. 264-563.000.

Tremont, Samuel J.: *See*—
Williamson, Alex N.; and Tremont, Samuel J., 4,243,825, Cl. 585-428.000.

Trenkler, Werner, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Body for motor vehicles, especially automobiles, with a sliding roof having a frame bottom. 4,243,261, Cl. 296-213.000.

Tri-State Oil Tool Industries, Inc.: *See*—
Johnson, Gary R., 4,243,252, Cl. 285-39.000.

Triestram, Douglas E.: *See*—
McPherson, Alex L.; Triestram, Douglas E.; and Lawrence, James E., Jr., 4,243,075, Cl. 138-174.000.

Trimborn, Werner: *See*—
Petersen, Harro; Fischer, Kurt; Klug, Hans; Trimborn, Werner; and Schmidt, Horst, 4,243,797, Cl. 528-239.000.

Tronc, Dominique: *See*—
Leboutet, Hubert; and Tronc, Dominique, 4,243,916, Cl. 315-111.800.

Trott, William A. Continuous electroforming of metal sheets with lines of weakness for bending and/or break out portions. 4,243,495, Cl. 204-11.000.

TRW Inc.: *See*—
DiBugnara, Raymond, 4,243,427, Cl. 106-287.160.
Larkin, Joseph F.; Cassidy, Harold M.; Woodcock, John W.; and Dunn, William M., 4,243,962, Cl. 334-7.000.

Trybulski, Eugene J.: *See*—
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,243,589, Cl. 260-245.500.

Trytten, Glaydon C. Ash-free fireplace ventilating apparatus. 4,243,015, Cl. 126-120.000.

Tsao, Utah, to Lummus Company, The. Heat and volatized salt recovery from reaction effluent. 4,243,650, Cl. 423-659.000.

Tsipenjuk, Yakov I.: *See*—
Galimov, Anas G.; Gelfand, Mikhail L.; Goldshtein, Boris G.; Kilin, Viktor E.; Sutyagin, Oleg Y.; Tsipenjuk, Yakov I.; Antipov, Georgy A.; and Yankovsky, Oleg, A., 4,243,108, Cl. 173-93.000.

Tsuda, Minoru; Nakamura, Yoichi; Nagata, Hideo; and Nakane, Hisashi, to Tokyo Ohka Kogyo Kabushiki Kaisha. Light sensitive compositions of polymethyl isopropenyl ketone. 4,243,740, Cl. 430-270.000.

Tsuda, Nobuaki; Kominami, Naoya; Inagaki, Kenji; and Imamiya, Tamotsu, to Asahi Kasei Kogyo Kabushiki Kaisha. Blood treating system. 4,243,532, Cl. 210-196.000.

Tsui, Frank F., to International Business Machines Corporation. Chip and wafer configuration and testing method for large-scale-integrated circuits. 4,244,048, Cl. 371-15.000.

Tsuji, Takao: *See*—
Goshima, Takeshi; Sato, Hideaki; and Tsuji, Takao, 4,243,849, Cl. 369-62.000.

Tsuji, Teruaki; and Watanabe, Shigeru, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for use to exchange O-ring interposed between in-core housing and in-core flange in nuclear reactor. 4,243,484, Cl. 176-30.000.

Tsujiuchi, Yoshio: *See*—
Motonami, Masanao; Yasumatsu, Jun; and Tsujiuchi, Yoshio, 4,243,185, Cl. 242-107.200.

Tsunemitsu, Hideo: *See*—
Sato, Susumu; and Tsunemitsu, Hideo, 4,244,002, Cl. 357-68.000.

Tsuzuki, Akira; and Miura, Atsushi, to Koritsu Kikai Kogyo Company Limited. Radial cutter type cleaning apparatus for coke oven door bottom surface. 4,243,490, Cl. 202-241.000.

Tsuzuki, Akira: *See*—
Fujita, Hiro; Tsuzuki, Akira; Ebiha, Heihachiro; and Sekiya, Fukuo, 4,244,043, Cl. 368-85.000.

Tuck, Alan D., Jr.: *See*—
Wilden, James K.; and Tuck, Alan D., Jr., 4,242,941, Cl. 91-319.000.

Tucker, James I., to Orion Industries, Inc. Spark plug cleaner with improved grit recycling. 4,242,844, Cl. 51-412.000.

Tucker, Mary Y. Earring stay. 4,242,886, Cl. 63-14.00B.

Turner, W. Bard, to C & K Components, Inc. Rotary coded switch. 4,243,853, Cl. 200-8.00R.

Tuxhorn KG: *See*—
Nolte, Ewald, 4,243,064, Cl. 137-117.000.

Twitchell, Brent L.; and Twitchell, Kendel S. Three-dimensional lift. 4,243,147, Cl. 212-159.000.

Twitchell, Kendel S.: *See*—
Twitchell, Brent L.; and Twitchell, Kendel S., 4,243,147, Cl. 212-159.000.

Tyler Refrigeration Corporation: *See*—
Abraham, Fayez F., 4,242,882, Cl. 62-256.000.

Tzikas, Athanassios, to Ciba-Geigy AG. Process for the manufacture of 1,4-diaminoanthraquinone-2-carboxylic acid. 4,243,600, Cl. 260-377.000.

Uchida, Masahiro: *See*—
Suzuki, Takeshi; Murao, Mikio; Uchida, Masahiro; and Nezuka, Minoru, 4,243,382, Cl. 432-78.000.

Ueda, Jun; Mori, Haruo; Hagimura, Kazuo; and Kato, Kotaro, to Nippon Telegraph and Telephone Public Corporation; and Oki Electric Industry Company, Ltd. PNPN Semiconductor switches. 4,244,000, Cl. 357-39.000.

Ueda, Takeshi; Kinoshita, Shozo; Sasaguri, Kiichiro; and Kobayashi, Hidehiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Dispersion imaging material and method of producing image thereon. 4,243,746, Cl. 430-346.000.

Ueno, Kaoru: *See*—
Ishimori, Tomitaro; and Ueno, Kaoru, 4,243,641, Cl. 423-179.500.

Ueno, Takafumi: *See*—
Takahashi, Kenichi; Fukuyama, Tatsuo; Ueno, Takafumi; Shimada, Yasuomi; and Ishii, Shinichiro, 4,243,839, Cl. 179-1.00F.
Ueta, Yutaka: *See*—
Tatemoto, Masayoshi; Suzuki, Takeshi; Tomoda, Masayasu; Furukawa, Yasuyoshi; and Ueta, Yutaka, 4,243,770, Cl. 525-331.000.
Umemoto, Takashi: *See*—
Shioya, Toshio; Nishimura, Hiroyuki; and Umemoto, Takashi, 4,242,998, Cl. 123-568.000.
Umemura, Mitsuo: *See*—
Takamizawa, Minoru; Okamoto, Haruo; Umemura, Mitsuo; and Kooya, Kazuo, 4,243,607, Cl. 570-257.000.
Union Carbide Corporation: *See*—
Eisenhardt, William A., Jr.; Hedaya, Eddie; and Theodoropulos, Spyros, 4,243,605, Cl. 556-414.000.
Engel, Stephen A., 4,243,436, Cl. 148-9.500.
Fraser, William A.; and Cieloszyk, Gary S., 4,243,619, Cl. 264-40.600.
Kaufman, Lawrence G.; and Merriam, Charles N., 4,243,767, Cl. 525-102.000.
Keogh, Michael J., 4,243,579, Cl. 260-45.70R.
Koleske, Joseph V.; Knopf, Robert J.; and Smith, Oliver W., 4,243,569, Cl. 260-29.6TA.
Naumann, Alfred W.; and Behan, Albert S., 4,243,553, Cl. 252-439.000.
Naumann, Alfred W.; and Behan, Albert S., 4,243,554, Cl. 252-439.000.
Powers, Robert A.; and Louzos, Demetrios V., 4,243,732, Cl. 429-105.000.
Sara, Raymond V., 4,243,169, Cl. 228-175.000.
Union Oil Company of California: *See*—
Dhondt, Roland O., 4,243,510, Cl. 208-11.00R.
Fenton, Donald M., 4,243,648, Cl. 423-573.00R.
Hass, Robert H.; and Hansford, Rowland C., 4,243,647, Cl. 423-573.00G.
United Electric Controls Company: *See*—
Reis, Robert D., 4,243,857, Cl. 200-83.00C.
United States of America
Agriculture: *See*—
Israilides, Cleanthes; Han, Youn W.; and Anderson, Arthur W., 4,243,686, Cl. 426-53.000.
Air Force: *See*—
Clinch, Marvin R.; Graf, Calvin R.; Martin, Paul E.; and Fenwick, Robert B., 4,244,053, Cl. 455-29.000.
Glass, Howard L.; Liaw, Jiin-Herny W.; and Kobayashi, Tsutumo, 4,243,697, Cl. 427-47.000.
Raymond, Roger S., 4,242,899, Cl. 72-342.000.
Army: *See*—
Alley, Bernard J.; Dake, James D.; and Dykes, Hiram W. H., 4,243,444, Cl. 149-98.000.
Gilbert, Everett E., 4,243,614, Cl. 568-931.000.
Yee, Tin B., 4,243,326, Cl. 356-414.000.
Energy: *See*—
Agouridis, Dimitrios C.; and Fox, Richard J., 4,243,885, Cl. 250-370.000.
Fox, Richard J., 4,242,789, Cl. 29-446.000.
Glass, Alexander J., 4,243,942, Cl. 330-4.300.
Gruhn, Charles R.; and Hammond, Robert B., 4,243,888, Cl. 250-491.000.
Niven, William A.; Shikany, S. David; and Shira, Michael L., 4,243,900, Cl. 310-49.00R.
Interior: *See*—
Herman, Charles, III, 4,242,915, Cl. 73-784.000.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Breckinridge, James B. Interferometer. 4,243,323, Cl. 356-345.000.
National Aeronautics and Space Administration: *See*—
Cornett, Jack E.; Saunders, Andrew A., Jr.; Marvin, Ira E.; and Beitler, Richard S., 4,242,864, Cl. 60-226.00R.
Navy: *See*—
Armantrout, Robert J., 4,243,442, Cl. 149-19.920.
Crosbie, Richard J.; and Edwards, Paul R., 4,243,024, Cl. 128-1.00A.
Forman, Donald B., 4,243,992, Cl. 343-873.000.
Jelks, Edward C., 4,244,037, Cl. 367-121.000.
Kaufman, Martin H., 4,243,771, Cl. 525-340.000.
McCool, John M.; Widrow, Bernard; Hearn, Robert H.; Zeidler, James R.; Chabries, Douglas M.; and Moore, Randall H., 4,243,935, Cl. 324-77.00R.
Richards, William E.; and Taylor, Henry F., 4,243,300, Cl. 350-150.000.
Saul, David L.; and Rubin, David, 4,243,949, Cl. 331-9.000.
White, David J.; Helmick, Carl N., Jr.; and Hunt, Robert E., 4,243,960, Cl. 333-196.000.
Woodward, Elmer D., 4,243,991, Cl. 343-777.000.
U.S. Philips Corporation: *See*—
Chapron, Claude, 4,243,896, Cl. 307-213.000.
Khoe, Giok D.; Gossink, Robert G.; and Jochem, Cornelis M. G., 4,243,399, Cl. 65-4.00B.
Lebailly, Jacques; and Varon, Jacques, 4,243,996, Cl. 357-17.000.
Wilson, Ian L., 4,243,906, Cl. 313-229.000.
United States Surgical Corporation: *See*—
Green, David T., 4,242,902, Cl. 72-410.000.
United Technologies Corporation: *See*—
Breton, Robert A., 4,242,871, Cl. 60-757.000.
DeBlois, Raymond L., 4,243,188, Cl. 244-53.00B.
Universal Sanitary Equipment Manufacturing Co., Inc.: *See*—
Rezin, Robert G., 4,242,847, Cl. 52-169.600.
University of California, The Regents of the: *See*—
Sovak, Milos; and Ranganathan, Ramachandra, 4,243,653, Cl. 424-5.000.
University of Leeds Industrial Service Ltd.: *See*—
Amis, Andrew A.; and Miller, James H., 4,242,758, Cl. 3-1.910.
Uno, Makoto: *See*—
Nishikawa, Kazuyoshi; and Uno, Makoto, 4,242,923, Cl. 74-700.000.
Unsold, Eberhard: *See*—
Hillenkamp, Franz; Kaufmann, Raimund; Unsold, Eberhard; Nietsche, Rainer; Wechsung, Reiner; Vogt, Henning; Bank, Walter; and Aberle, Lothar, 4,243,887, Cl. 250-423.00P.
Untermyer, Samuel, II, to National Nuclear Corp. Apparatus and method for the measurement of neutron moderating or absorbing properties of objects. 4,243,886, Cl. 250-390.000.
UOP Inc.: *See*—
Antos, George J., 4,243,558, Cl. 252-466.00B.
Antos, George J., 4,243,826, Cl. 585-434.000.
Carson, Don B., 4,243,830, Cl. 585-717.000.
Malloy, Thomas P.; and Lester, George W., 4,243,831, Cl. 585-824.000.
Mitsche, Roy T.; and Pope, George N., 4,243,515, Cl. 208-138.000.
Riley, Robert L.; and Grabowsky, Richard L., 4,243,701, Cl. 427-244.000.
Ryu, Ji-Yong, 4,243,827, Cl. 585-463.000.
Vickers, Anthony G., 4,243,634, Cl. 422-144.000.
Upjohn Company, The: *See*—
Morton, Douglas R., Jr., 4,243,592, Cl. 260-340.700.
Sih, John C., 4,243,611, Cl. 568-379.000.
Urbansky, Rolf, to Volkswagenwerk Aktiengesellschaft. Ignition timing control device for a turbo-charged internal combustion engine. 4,242,996, Cl. 123-407.000.
Ushakov, Vladimir F.; Pergunov, Alexandr I.; Alexeev, Albert V.; Maslennikov, Pavel N.; and Seljutin, Vladimir I. Apparatus for preparing and feeding an abrasive-containing suspension into the zone of action of work tools of polishing and finishing lathes. 4,242,841, Cl. 51-263.000.
USM Corporation: *See*—
Osborne, Michael L.; and Hadley, Michael J., 4,242,939, Cl. 411-41.000.
Utracki, Lechoslaw A. M., to C-I-L Inc. Azide and doped iron oxide gas generating composition. 4,243,443, Cl. 149-35.000.
Utsumi, Yoshihiro, to TEAC Corporation. Focus control system for optical read-out apparatus. 4,243,848, Cl. 369-45.000.
Van Arnam, Donald E., to Avery International Corporation. Method for forming retroreflective sheeting. 4,243,618, Cl. 264-1.000.
Vanassche, Roger; and Verbauwhede, Germain, to N.V. Bekaert S.A. Steel cord reinforcement for elastomers as well as thus reinforced elastomers. 4,243,714, Cl. 428-258.000.
Van den Bergh, Marc F. S. M., to Miller-Johannisberg Druckmaschinen GmbH. Paper folding and conveying apparatus and method. 4,243,215, Cl. 493-422.000.
van der Lely, Cornelis. Rotary harrows. 4,243,103, Cl. 172-59.000.
Vandermarliere, Charles: *See*—
Curinier, Jean; and Vandermarliere, Charles, 4,242,779, Cl. 28-101.000.
Van der Meer, James C.: *See*—
Kuntner, Richard J.; and Van der Meer, James C., 4,243,894, Cl. 307-147.000.
van der Schoot, Peter W. C., to Goudsche Machinefabriek B.V. Peeling apparatus. 4,242,952, Cl. 99-625.000.
Vandling, John M., to Exxon Research & Engineering Co. Facsimile receiver signalling. 4,244,007, Cl. 358-257.000.
Van Ess, John C., to Ross, Walter A. Light mounting tapes. 4,244,014, Cl. 362-249.000.
van Geest, Lambertus K.; and Houtkamp, Johannes J., to N.V. Optische Industrie "De Oude Delft". Method of making the cathode of a diode image intensifier tube, and image intensifier tube having a cathode made by this method. 4,243,905, Cl. 313-102.000.
Van Gelder, Josephus L. H.: *See*—
Raeymaekers, Alfons H. M.; Van Gelder, Josephus L. H.; Boeckx, Gustaaf M.; and Van Hemeldonck, Lodewijk L., 4,243,806, Cl. 544-396.000.
Van Hemeldonck, Lodewijk L.: *See*—
Raeymaekers, Alfons H. M.; Van Gelder, Josephus L. H.; Boeckx, Gustaaf M.; and Van Hemeldonck, Lodewijk L., 4,243,806, Cl. 544-396.000.
van Koten, Gerard: *See*—
Noltes, Jan G.; Jastrzebski, J. T. B. H.; and van Koten, Gerard, 4,243,604, Cl. 260-430.000.
Noltes, Jan G.; van Koten, Gerard; and Cohen, Murray S., 4,243,824, Cl. 585-259.000.
van Zalinge, Henk. Stringed musical instrument. 4,242,938, Cl. 84-1.160.
Vapor Corporation: *See*—
McKenney, James L., 4,243,871, Cl. 219-326.000.
Vareide, Dag; and Solheim, Odd E. Method and device for distributing liquid fuel to a fluidized bed. 4,243,380, Cl. 432-15.000.
Varga, Sandor: *See*—
Sipos, Sandor; Varga, Sandor; and Hali, Imre, 4,243,104, Cl. 172-148.000.

Varma, Ravi K.; and Vogt, B. Richard, to E. R. Squibb & Sons, Inc. 3-(4-Hydroxyphenyl)pentanedioic acid, monohydrazide, derivatives and analogs. 4,243,608, Cl. 260-501.110.

Varma, Ravi K.: *See—*
Chao, Sam T.; and Varma, Ravi K., 4,243,586, Cl. 260-239.55R.

Varon, Jacques: *See—*
Lebailly, Jacques; and Varon, Jacques, 4,243,996, Cl. 357-17.000.

Vasin, Jury P.: *See—*
Kruglikov, Anatoly A.; Nikolaeva, Militina A.; Vasin, Jury P.; Itkis, Zolya Y.; Shirinkin, Vladimir A.; Zimina, Ida A.; Strupinsky, Vladimir A.; and Koposov, Valery V., 4,243,780, Cl. 525-518.000.

Vegh, Daniel; and Kovac, Jaroslav, to Rektorat Slovenskej vysokej skoly technickej. (5-Nitro-2-furyl)vinylene-2-trimethylammonium bromide and method of preparing same. 4,243,596, Cl. 260-347.700.

Venkov, Boris V.: *See—*
Nazarian, Artashes R.; Kremlev, Vyacheslav Y.; Kokin, Vilyam N.; Sladkov, Viktor I.; Venkov, Boris V.; and Lavrov, Vadim V., 4,243,895, Cl. 307-205.000.

Verbauwhede, Germain: *See—*
Vanassche, Roger; and Verbauwhede, Germain, 4,243,714, Cl. 428-258.000.

Vercellotti, Leonard C.: *See—*
Engel, Joseph C.; Vercellotti, Leonard C.; and Schroeder, Dale W., 4,243,876, Cl. 235-455.000.

Vereinigte Flugtechnische Werke-Fokker GmbH: *See—* ,
Sobotta, Werner, 4,243,922, Cl. 318-561.000.

Ver Hoef, Niel; and Kurth, Donald D. Spinner apparatus. 4,243,223, Cl. 273-141.00R.

Vermeulen, Teunis, to Koninklijke Bos Kalis Westminster Group N.V. Suction pipe position control. 4,242,815, Cl. 37-58.000.

Vermot, Michel, to Ebauches Electroniques SA. Electronic timepiece with an alarm device. 4,244,041, Cl. 368-73.000.

Vickers, Anthony G., to UOP Inc. Fluid catalyst regeneration apparatus. 4,243,634, Cl. 422-144.000.

Vieau, Richard R.; and Vieau, Robert A. Multiple wire electrode feed mechanism for electroerosion machine. 4,243,864, Cl. 219-69.00W.

Vieau, Robert A.: *See—*
Vieau, Richard R.; and Vieau, Robert A., 4,243,864, Cl. 219-69.00W.

Vieland, Leon J.: *See—*
Bortfeld, David P.; and Vieland, Leon J., 4,243,912, Cl. 315-3.000.
Winarsky, Norman D.; Cohen, Roger W.; Bortfeld, David P.; and Vieland, Leon J., 4,243,911, Cl. 315-3.000.

Viessmann, Hans. Connecting arrangement for a heating boiler. 4,242,987, Cl. 122-44.00A.

Viggo AB: *See—*
Brandt, Werner J., 4,243,034, Cl. 128-214.400.

Vinals, Joaquin F.: *See—*
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,243,823, Cl. 568-824.000.

Vincent, Robert R.: *See—*
Clemenson, James T.; and Vincent, Robert R., 4,243,110, Cl. 173-104.000.

Vinel, Rene; Querton, Jean-Pierre; and Serville, Claude, to SKF Compagnie d'Applications Mecaniques. Self-centering clutch release bearing comprising guide means. 4,243,130, Cl. 192-98.000.

Visos, Charles D.: *See—*
Fernstrom, Carl F.; and Visos, Charles D., 4,243,373, Cl. 431-66.000.

Vitek, Inc.: *See—*
Homsy, Charles A.; and Homsy, Paul T., 4,243,021, Cl. 126-449.000.

Vizugyi Tervezo Vallalat: *See—*
Merenyi, Miklos; Huszar, Laszlo; and Hidvegi, Janos, 4,242,850, Cl. 52-745.000.

Vock, Manfred H.; Giacino, Christopher; Hruza, Anne; Withycombe, Donald A.; Mookherjee, Braja D.; and Mussinan, Cynthia J., to International Flavors & Fragrances Inc. Flavoring with 2-substituted-4,5-dimethyl-Δ^3-thiazolines. 4,243,688, Cl. 426-535.000.

Vock, Manfred H.: *See—*
Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., 4,243,823, Cl. 568-824.000.

Voest-Alpine Aktiengesellschaft: *See—*
Laimer, Friedrich, 4,243,208, Cl. 266-158.000.

Vogel, Eberhard: *See—*
Armbruster, Gerhard; Kleider, Albert; and Vogel, Eberhard, 4,242,839, Cl. 51-170.0MT.

Vogel, Jacobus E., to Shell Oil Company. Waste heat boiler. 4,243,097, Cl. 165-163.000.

Vogel, Lambert P.; and Steffl, Robert J., to Westgo Industries, Inc. Foldable agricultural implement. 4,243,105, Cl. 172-311.000.

Vogt, B. Richard: *See—*
Varma, Ravi K.; and Vogt, B. Richard, 4,243,608, Cl. 260-501.110.

Vogt, Henning: *See—*
Hillenkamp, Franz; Kaufmann, Raimund; Unsold, Eberhard; Nietsche, Rainer; Wechsung, Reiner; Vogt, Henning; Bank, Walter; and Aberle, Lothar, 4,243,887, Cl. 250-423.00P.

Voigt, Richard L.: *See—*
Lukens, Herbert R., Jr.; Snowden, Donald P.; and Voigt, Richard L., 4,243,644, Cl. 423-352.000.

Voith Transmit GmbH: *See—*
Muller, Helmut; and Schweizer, Heinz, 4,242,889, Cl. 64-30.00R.

Volkswagenwerk Aktiengesellschaft: *See—*
Urbansky, Rolf, 4,242,996, Cl. 123-407.000.

Von Roll AG: *See—*
Aeberli, Hans, 4,243,635, Cl. 422-176.000.

von Dorp, Walter; and Steinbrecher, Heinrich, to Wean United, Inc. Method and apparatus for producing thin tubes in a skew-rolling mill. 4,242,894, Cl. 72-96.000.

Vorona, Ilya I.; Ioganson, Rikhard A.; Perchenok, Mark B.; Chegodaev, Evgeny V.; and Chulin, Valentin I. Eddy current machine brake control device. 4,243,901, Cl. 310-94.000.

Vossen, Franz; and Vossen, Georg M., to Wupa-Maschinenfabrik GmbH. Method for separating and stacking sheets of paper and the like. 4,243,166, Cl. 225-1.000.

Vossen, Georg M.: *See—*
Vossen, Franz; and Vossen, Georg M., 4,243,166, Cl. 225-1.000.

Vrisakis, Georges: *See—*
Donnet, Jean-Baptise; Baudru, Bernard; Coudurier, Maurice; and Vrisakis, Georges, 4,243,428, Cl. 106-288.00B.

Vyas, Arvind C., to NCR Canada Ltd. - NCR Canada Ltee. Method and apparatus for detecting the multiple feeding of documents. 4,243,983, Cl. 340-674.000.

W. S. Rockwell Company: *See—*
Toth, William L., 4,243,696, Cl. 427-27.000.

Waegaert, Pierre: *See—*
Bossuet, Jean; Godet, Jean; Guiton, Jean-Francois; Sizarol, Rene; and Waegaert, Pierre, 4,243,055, Cl. 131-76.000.

Wagner, James E.: *See—*
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Wagster, Robert P.: *See—*
Bunyea, Roderick F.; and Wagster, Robert P., 4,243,212, Cl. 269-75.000.

Wahlig, Helmut: *See—*
Gericke, Rolf; Rogalski, Werner; Bergmann, Rolf; Hameister, Walter; and Wahlig, Helmut, 4,243,810, Cl. 546-295.000.

Wainwright, Paul: *See—*
Hargreaves, Keith; Hartley, David; and Wainwright, Paul, 4,243,791, Cl. 526-320.000.
Hartley, David; Barrett, Michael D.; and Wainwright, Paul, 4,243,434, Cl. 148-6.15R.

Waits, Gregory D. Expansible boat trailer. 4,243,242, Cl. 280-414.00R.

Wakeman, David R.; Goldberg, Ernest; and MacKenzie, Gordon C., to Raytheon Company. Antitank weapon system and elements therefor. 4,242,962, Cl. 102-213.000.

Wakoh Corporation: *See—*
Nagai, Kiyoshi, 4,243,910, Cl. 313-522.000.

Waldman, Herbert H. Hold circuit for telephone system. 4,243,844, Cl. 179-81.00R.

Walker, John A. Pet toilet. 4,242,763, Cl. 119-1.000.

Wall, Christopher; and Scaife, Ronald, to Dresser Europe S.A. Draw bar unit. 4,243,115, Cl. 180-165.000.

Wallace, Gene A.: *See—*
Hogan, James J.; Lambert, Charles O.; and Wallace, Gene A., 4,244,029, Cl. 364-728.000.

Wallace, Harry L.; Horak, Anthony; Krebs, Fred G.; and Brown, Louis R., to Burroughs Corporation. Dot printer adjustable endless loop ribbon cartridge transport apparatus. 4,243,330, Cl. 400-194.000.

Wallace Murray Corporation: *See—*
Bremer, Robert C., Jr., 4,242,921, Cl. 74-574.000.

Walliczek, Erwin G. Biosynthetic polymeric compositions. 4,243,656, Cl. 424-28.000.

Walser, Armin: *See—*
Fryer, Rodney I.; Trybulski, Eugene J.; and Walser, Armin, 4,243,589, Cl. 260-245.500.

Walsh, Robert M., to Hercules Incorporated. Heat fusible polyester and polyamide dispersions. 4,243,702, Cl. 427-256.000.

Walters, Sandra J.: *See—*
Lal, Joginder; and Walters, Sandra J., 4,243,561, Cl. 260-4.00R.

Walther, William D.; and DeRegnaucourt, Robert A., to Dayton-Walther Corporation. Edge lugged tire carrying rim and wheels. 4,243,269, Cl. 301-12.00R.

Wang, Chien S. Class-B current source amplifier. 4,243,946, Cl. 330-265.000.

Ward, Clifford, to Ashland Oil, Inc. Catalyst for oxidizing mercaptans and mercaptide compounds and method for preparing. 4,243,551, Cl. 252-428.000.

Ward, Eldon L.: *See—*
Martin, Charles W.; and Ward, Eldon L., 4,243,675, Cl. 424-286.000.

Ware, Lyle A., to Medtronic, Inc. Enclosure system for body implantable electrical systems. 4,243,042, Cl. 128-419.00P.

Warnaka, Glenn E., to Lord Corporation. Sound absorbing structure. 4,243,117, Cl. 181-286.000.

Warner, Richard C.; and Weber, Donald J., to Singer Company, The. Ternary to binary converter. 4,243,976, Cl. 340-347.0DD.

Warner & Swasey Company, The: *See—*
Shook, William M., 4,243,107, Cl. 173-43.000.

Warren, John B.; Robinson, Ernest Y.; and Kazanjy, Robert P., to Ares, Inc. Explosive fuse for projectile. 4,242,964, Cl. 102-275.000.

Wassermann, Carl I., to North Atlantic Industries, Inc. Magnetically actuated equipment. 4,242,955, Cl. 101-93.290.

Watanabe Applied Science Research Institute: *See—*
Watanabe, Nobuatsu; and Kita, Yasushi, 4,243,615, Cl. 570-150.000.

Watanabe Engineering Co., Ltd.: *See—*
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Watanabe, Kazuo: *See—*
Makabe, Hachiro; Watanabe, Kazuo; Takenoya, Hideaki; Kakinuma, Toshihide; and Kume, Toshiaki, 4,242,973, Cl. 112-158.00E.

Watanabe, Kenji; and Akashi, Goro, to Fuji Photo Film Co., Ltd. Calender roll for use in super calender for magnetic tapes. 4,242,783, Cl. 29-132.000.

Watanabe, Mamoru, to Watanabe Engineering Co., Ltd. Device for preventing rattling of pads in disc brakes. 4,243,123, Cl. 188-73.500.

Watanabe, Nobuatsu; and Kita, Yasushi, to Watanabe Applied Science Research Institute; and Watanabe, Nobuatsu. Process for preparing poly-dicarbon monofluoride. 4,243,615, Cl. 570-150.000.

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Tsuji, Teruaki; and Watanabe, Shigeru, 4,243,484, Cl. 176-30.000.

Wean United, Inc.: *See—*
Boshold, Raymond F.; and Kent, Francis J., 4,242,895, Cl. 72-257.000.
von Dorp, Walter; and Steinbrecher, Heinrich, 4,242,894, Cl. 72-96.000.

Web Printing Controls Co., Inc.: *See—*
Gnuechtel, Herman C., 4,243,925, Cl. 318-603.000.

Webb, Richard L.: *See—*
Rosensaft, Michael N.; and Webb, Richard L., 4,243,775, Cl. 525-415.000.

Weber, Donald J.: *See—*
Warner, Richard C.; and Weber, Donald J., 4,243,976, Cl. 340-347.0DD.

Weber, Edward V.: *See—*
Pfeiffer, Hans C.; Ryan, Philip M.; and Weber, Edward V., 4,243,866, Cl. 219-121.0EK.

Weber, Harold G.: *See—*
Flynn, Patrick F.; Weber, Harold G.; and Mulloy, John M., 4,243,357, Cl. 415-215.000.

Weber, Klaus: *See—*
Dobler, Rudolf; and Weber, Klaus, 4,243,891, Cl. 250-571.000.

Weber, Robert, to Kraftwerk Union AG. Storage rack for elongated fuel assemblies. 4,243,889, Cl. 250-507.000.

Weber, Robert E.; and Weissler, Harold E., II, to Bendix Corporation, The. Dual voltage regulator with low voltage shutdown. 4,244,050, Cl. 371-66.000.

Weber, Rudolf: *See—*
Puchta, Rolf; Schwadtke, Karl; Harder, Hans; and Weber, Rudolf, 4,243,391, Cl. 8-111.000.

Wechsung, Reiner: *See—*
Hillenkamp, Franz; Kaufmann, Raimund; Unsold, Eberhard; Nietsche, Rainer; Wechsung, Reiner; Vogt, Henning; Bank, Walter; and Aberle, Lothar, 4,243,887, Cl. 250-423.00P.

Wegenka, Mark A.: *See—*
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Wehde, Heinz; Wulfhorst, Burkhard; and Schumann, Fritz, to Teldix GmbH. Yarn monitoring apparatus for an open end spinning turbine. 4,242,860, Cl. 57-81.000.

Weigl, Erwin, to Polyair Produkt Design GmbH. Safety binding for skiing boots. 4,243,246, Cl. 280-628.000.

Weinstein, Belson J.; and Hyndman, Bruce H., to Weinstein, Belson J. V Lead extender for ECG. 4,243,046, Cl. 128-709.000.

Weiss, Martin J.: *See—*
Wissner, Allan; Weiss, Martin J.; and Bernady, Karel F., 4,243,817, Cl. 560-62.000.

Weissler, Harold E., II: *See—*
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Welch, Melvin B.; and Dietz, Richard E., to Phillips Petroleum Company. Polymerization catalyst and process. 4,243,552, Cl. 252-429.00B.

Weldon, Harry P.: *See—*
Cha, John H.; Brown, Wesley A.; Weldon, Harry P.; and Whyte, Daniel G., 4,243,345, Cl. 405-168.000.

Wells, Donald G.: *See—*
Sizelove, Cary L.; and Wells, Donald G., 4,243,352, Cl. 414-313.000.

Wen Products, Inc.: *See—*
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Wendt, Hans: *See—*
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Wengert, Rolf; and Huber, Wilhelm, to Siemens Aktiengesellschaft. Double mask raster method for applying slurry in a discrete pattern. 4,243,695, Cl. 427-14.100.

Wengert, Rolf: *See—*
Kobale, Manfred; Lorenz, Hans-Peter; and Wengert, Rolf, 4,243,735, Cl. 430-25.000.

Wenrick, Brian A., to Protective Treatments, Inc. Two piece trim strip. 4,243,711, Cl. 428-31.000.

Wenzler, Carl J.: *See—*
Rom, Frank E.; Wenzler, Carl J.; and Maag, William L., 4,243,023, Cl. 126-449.000.

Werber, Fred W. K. R. Garment designing aid. 4,242,800, Cl. 33-14.000.

Werner, Peter: *See—*
Suchowerskyj, Wadym; Seibel, Berthold; and Werner, Peter, 4,243,971, Cl. 340-52.00H.

Wescor, Inc.: *See—*
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Wessel-Werk Gesellschaft mit beschrankter Haftung: *See—*
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West, Robert F.: *See—*
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Western Electric Company, Inc.: *See—*
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Westgo Industries, Inc.: *See—*
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Westinghouse Electric Corp.: *See—*
Cherba, David M., 4,244,034, Cl. 364-900.000.
Engel, Joseph C.; Vercellotti, Leonard C.; and Schroeder, Dale W., 4,243,876, Cl. 235-455.000.
Farkas, Alexander, 4,242,925, Cl. 74-792.000.
Jackovitz, John F.; Panson, Armand J.; and Pantier, Earl A., 4,243,638, Cl. 423-17.000.
Lahoda, Edward J., 4,243,645, Cl. 423-428.000.
Raven, Robert S., 4,244,036, Cl. 367-88.000.
Sprengling, Gerhard R.; and Cargnel, Louis A., 4,243,623, Cl. 264-69.000.

Wetzels, Walter, to Schumag GmbH. Arc cutting device with mechanical material removal. 4,243,862, Cl. 219-68.000.

Wheelwright, Lynn M.: *See—*
Marzalek, Michael S.; and Wheelwright, Lynn M., 4,244,024, Cl. 364-485.000.

Whirlpool Corporation: *See—*
Dingler, Geoffrey L.; and Johnson, Philip P., 4,243,431, Cl. 134-104.000.

White, Alan C.: *See—*
Edington, Edwin T.; and White, Alan C., 4,243,808, Cl. 546-285.000.

White, David J.; Helmick, Carl N., Jr.; and Hunt, Robert E., to United States of America, Navy. Method and materials for tuning the center frequency of narrow-band surface-acoustic-wave (SAW) devices by means of dielectric overlays. 4,243,960, Cl. 333-196.000.

White, James L.; and Berg, James G., to Minnesota Mining and Manufacturing Company. Mixture of rough and spheroidized resin particles. 4,243,794, Cl. 528-112.000.

White, Robert C., to Ontario Research Foundation. M.C.P. Joint replacement. 4,242,759, Cl. 3-1.910.

Whiteside, George D.: *See—*
Johnson, Bruce K.; and Whiteside, George D., 4,243,309, Cl. 354-197.000.

Whitney, Daniel E.; and Nevins, James L., Jr., to Massachusetts Institute of Technology. Servo-controlled mobility device. 4,243,923, Cl. 318-561.000.

Whitney, Russell A. Catamaran dolly. 4,243,239, Cl. 280-47.13B.

Whittaker Corporation: *See—*
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Whittingham, M. Stanley: *See—*
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Widrow, Bernard: *See—*
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Wier, Jan H. Connector. 4,243,343, Cl. 403-397.000.

Wiersema, Richard J.: *See—*
Sperry, Peter R.; and Wiersema, Richard J., 4,243,430, Cl. 106-308.00M.

Wiggins, Wayne T., to Standard Oil Company. Adhesion promoter for acrylonitrile copolymer latex coatings. 4,243,707, Cl. 427-388.400.

Wiggins, Wayne T.; and Gerry, Frank S., to Standard Oil Company. Tie layer for co-extruded acrylonitrile copolymers. 4,243,725, Cl. 428-517.000.

Wikel, James H.: *See—*
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Wikoff, Mark W., to Best & Donovan. Hand held band saw. 4,242,798, Cl. 30-380.000.

Wilde, Doran K., to Tektronix, Inc. Phase-multiplexed CCD transversal filter. 4,243,958, Cl. 333-165.000.

Wilden, James K.; and Tuck, Alan D., Jr., to Wilden Pump & Engineering Co. Actuator valve. 4,242,941, Cl. 91-319.000.

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Wilden, James K.; and Tuck, Alan D., Jr., 4,242,941, Cl. 91-319.000.

Wilhelm, Alfred: *See—*
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Marzel, Otto; Schwedes, Wilhelm; and Wilhelm, Alfred, 4,243,698, Cl. 427-157.000.

Wilklow, Theodore L.: *See—*
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Will, Peter: *See—*
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Williams, Alea. Refrigeration system and thermal exchanger therefor. 4,242,881, Cl. 62-275.000.

Williams, Charles E., to Grow Group, Inc. One package stable adhesive and method of using the adhesive. 4,243,706, Cl. 427-386.000.

Williams, James K. Writing instrument and holder assembly. 4,243,338, Cl. 401-195.000.

Williams, Ralph P., to Phillips Petroleum Company. Prepolymers for photocurable compositions. 4,243,793, Cl. 528-75.000.

Williams, Robert A. Shield termination means for electrical connector. 4,243,290, Cl. 339-143.00R.

Williamson, Alex N.; and Tremont, Samuel J., to Monsanto Company. Dehydrocoupling of toluene. 4,243,825, Cl. 585-428.000.

Williamson, Raymond E., to ACF Industries, Incorporated. By-pass valve. 4,242,866, Cl. 60-290.000.

Willoughby, Robert A.; and Budziak, Renno W., to Ingersoll-Rand Company. Automatic shut-off valve for power tools. 4,243,111, Cl. 173-169.000.

Wilson, George W.: *See*—
Bennett, Virgil O.; and Wilson, George W., 4,242,917, Cl. 74-5.500.

Wilson, Ian L., to U.S. Philips Corporation. High pressure mercury vapor discharge lamp. 4,243,906, Cl. 313-229.000.

Wilson, Jerry F., to Olinkraft, Inc. Three-piece foldable basket carrier and blank for forming the same. 4,243,138, Cl. 206-188.000.

Wilson, Phillip S.: *See*—
Mark, Victor; and Wilson, Phillip S., 4,243,570, Cl. 260-30.200.
Myers, Donald C.; and Wilson, Phillip S., 4,243,575, Cl. 260-37.0PC.

Wilson, Richard A.; Schreiber, William L.; Mookherjee, Braja D.; Kiwala, Jacob; Vinals, Joaquin F.; Vock, Manfred H.; Stork, Gilbert; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. 2,6,6-Trimethyl-α-(iso)propenyl-1-cyclohexene-1-methanols and -1,3-cyclohexadiene-1-methanols and organoleptic uses thereof. 4,243,823, Cl. 568-824.000.

Wilson, Walter A., to National Steel Corporation. Method for metal strip temperature control. 4,243,441, Cl. 148-128.000.

Winarsky, Norman D.; Cohen, Roger W.; Bortfeld, David P.; and Vieland, Leon J., to RCA Corporation. Resistive lens electron gun with compound linear voltage profile. 4,243,911, Cl. 315-3.000.

Winrow, Donald, to Ferranti-Packard Limited. Display or indicating device with magnetic stop. 4,243,978, Cl. 340-373.000.

Winsett, Walter P., to Mosley, Darrell T. Means for attaching a boat to a trailer. 4,242,768, Cl. 9-1.200.

Wisler, Allen E.; and Lane, Leo D., to Hughes Tool Company. Surface smoothed tool joint hardfacing. 4,243,727, Cl. 428-558.000.

Wissner, Allan; Weiss, Martin J.; and Bernady, Karel F., to American Cyanamid Company. Prostenoic acids and esters. 4,243,817, Cl. 560-62.000.

Witco Chemical Corporation: *See*—
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Witheridge, Rodney E.: *See*—
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Withycombe, Donald A.: *See*—
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Witte, Hans H.: *See*—
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Wittemann, Robert F., to Johnson & Johnson. Disposable electrode. 4,243,051, Cl. 128-798.000.

Wolber: *See*—
Ferrary, Jean-Paul, 4,243,450, Cl. 156-123.00R.

Wolf, Clifford R. Device for selectively distorting reflected images and the method of performing same. 4,243,315, Cl. 355-52.000.

Wolf, Johann, to Johann Wolf Gesellschaft m.b.H. KG. Unloader for taking feed from a horizontal silo. 4,243,346, Cl. 406-57.000.

Wolfrum, Gerhard: *See*—
Sommer, Richard; Wolfrum, Gerhard; and Buttner, Gerhard, 4,243,584, Cl. 260-165.000.

Wolfson, Ronald I.: *See*—
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Wolkstein, Herbert J.; Dornan, Brian R.; and Goel, Jitendra, to RCA Corporation. High repetition rate driver circuit for modulation of injection lasers. 4,243,951, Cl. 331-94.50H.

Wong, Ting W.: *See*—
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Woodcock, John W.: *See*—
Larkin, Joseph F.; Cassidy, Harold M.; Woodcock, John W.; and Dunn, William M., 4,243,962, Cl. 334-7.000.

Woodhead, Robert G., to American Thread Company, The. Cassette modules and displays for tubular articles. 4,243,145, Cl. 211-49.00D.

Woodhull, Ivan D., Jr.; and Liedel, Thomas H., to Karmazin Products Corporation. Condenser header construction. 4,243,094, Cl. 165-114.000.

Woodrow, Harold E.: *See*—
Wykes, Robert D.; and Woodrow, Harold E., 4,242,892, Cl. 72-66.000.

Woodward, Elmer D., to United States of America, Navy. Antenna feed for scan-with-compensation tracking. 4,243,991, Cl. 343-777.000.

Worrall, James D.; and Auger, Suzanne M., to Engineered Yarns, Inc. Woven fabric having a textured, multicolor appearance, and method of producing same. 4,243,713, Cl. 428-245.000.

Wotowiec, Joseph P., to General Electric Company. Circular fluorescent light unit. 4,244,013, Cl. 362-216.000.

Wright, Allen T.; and Fischbeck, Kenneth H., to Xerox Corporation. Encapsulated piezoelectric pressure pulse drop ejector apparatus. 4,243,995, Cl. 346-140.00R.

Wright, Anthony A. Cutting board. 4,243,184, Cl. 241-273.200.

Wright, Helen A., executrix: *See*—
Wright, Raymond C., deceased, 4,243,273, Cl. 303-22.00A.

Wright, John J., to Schering Corporation. 6''-Amino derivatives of 4-0-aminoglycosyl-6-0-garosaminyl-1,3-diaminocyclitols. 4,243,801, Cl. 536-17.00R.

Wright, Leslie S., Jr., to Ladney, Michael, Jr. Process and apparatus for the regeneration of chromic acid baths. 4,243,501, Cl. 204-180.00P.

Wright, Marvin D. Pad for protecting floors against water damage. 4,243,197, Cl. 248-678.000.

Wright, Ralph J., to Dixon, Rita M. Pet feces pick-up device. 4,243,259, Cl. 294-1.00B.

Wright, Raymond C., deceased (by Wright, Helen A., executrix), to American Standard Inc. Adjustable variable load valve device. 4,243,273, Cl. 303-22.00A.

Wright, William B., to Rolls-Royce Limited. Cantilevered structures. 4,243,360, Cl. 416-191.000.

Wrobel, Joseph J.: *See*—
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Wulfhorst, Burkhard: *See*—
Wehde, Heinz; Wulfhorst, Burkhard; and Schumann, Fritz, 4,242,860, Cl. 57-81.000.

Wupa-Maschinenfabrik GmbH: *See*—
Vossen, Franz; and Vossen, Georg M., 4,243,166, Cl. 225-1.000.

Wurst, Bert: *See*—
Schramm, Herbert; and Wurst, Bert, 4,242,995, Cl. 123-425.000.

Wykes, Robert D.; and Woodrow, Harold E., to Morgan Construction Company. Laying head with segmented laying pipe. 4,242,892, Cl. 72-66.000.

Wyss, Georges, to Ateliers des Charmilles, S.A. Electrical discharge machining apparatus with simultaneous relative advance and cyclic translational movement of the electrodes. 4,243,863, Cl. 219-69.00V.

Wyss, Ronald. Air diffuser. 4,243,616, Cl. 261-122.000.

Xerox Corporation: *See*—
Bobick, Thomas W., 4,243,987, Cl. 340-799.000.
Kramer, Charles J., 4,243,293, Cl. 350-3.710.
Savage, James G.; and Jagger, Brian E., 4,243,331, Cl. 400-59.000.
Wright, Allen T.; and Fischbeck, Kenneth H., 4,243,995, Cl. 346-140.00R.

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Yamada, Michihiro: *See*—
Fujishima, Kazuyasu; Yamada, Michihiro; and Nagasawa, Kouichi, 4,243,897, Cl. 307-221.00D.

Yamada, Minoru, to Yamaha Hatsukoki Kabushiki Kaisha. Induction system of multi-cylinder engine. 4,243,000, Cl. 123-442.000.

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Yamada, Mitsuhiko, to Dainippon Screen Seizo Kabushiki Kaisha. Method for analog-digital conversion, and a picture reproduction method employing the same. 4,244,004, Cl. 358-138.000.

Yamada, Sadao; Arita, Isao; Ito, Tadashi; and Nakamoto, Soichi, to Canon Kabushiki Kaisha; and Tokyo Shibaura Electric Co., Ltd. Exposure computation circuit. 4,243,308, Cl. 354-60.00E.

Yamada, Syozo: *See*—
Honna, Takaji; Tanaka, Motoaki; Yamada, Syozo; and Miyake, Hidekazu, 4,243,812, Cl. 548-248.000.

Yamaguchi, Hisayoshi; and Kuroyanagi, Itsuo, to Shin-Etsu Handatai Co. Ltd. Method for detecting crystal defects in semiconductor silicon and detecting solution therefor. 4,243,473, Cl. 156-626.000.

Yamaha Hatsukoki Kabushiki Kaisha: *See*—
Yamada, Minoru, 4,243,000, Cl. 123-442.000.
Yamada, Minoru, 4,243,001, Cl. 123-583.000.

Yamamoto, Ryoichi: *See*—
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Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, to Showa Denko K.K. Process for purifying crude olefin oxides. 4,243,492, Cl. 203-8.000.

Yamamura, Yuichi: *See*—
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Yamashita, Kunio: *See*—
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Yamazaki, Mitsuyoshi: *See*—
Yamamura, Toshio; Osawa, Yoshiro; Ouchi, Isao; Oda, Nobuteru; Yamazaki, Mitsuyoshi; and Nishiyama, Yukio, 4,243,492, Cl. 203-8.000.

Yanagida, Kiyomi; Magusa, Harumi; and Takahashi, Akihiko, to Sumitomo Aluminium Smelting Co., Ltd.; and Nihon Atsuen Kogyo K.K. Production of aluminum impact extrusions. 4,243,438, Cl. 148-11.50A.

Yancey, Paul J., to La Pierre Synthetique Baikowski, S.A. Precision polishing suspension and method for making same. 4,242,842, Cl. 51-298.000.

Yankovsky, Oleg A.: *See*—
Galimov, Anas G.; Gelfand, Mikhail L.; Goldshtein, Boris G.; Kilin, Viktor E.; Sutyagin, Oleg Y.; Tsipenjuk, Yakov I.; Antipov, Georgy A.; and Yankovsky, Oleg A., 4,243,108, Cl. 173-93.000.

Yapp, William J.; and McDonald, Robert E., to Sherwin-Williams Company, The. Process for coating high solids coating compositions. 4,243,705, Cl. 427-386.000.
Yarbrough, John K. Current monitor. 4,243,982, Cl. 340-664.000.
Yashin, Jury N.: *See*—
Deribas, Andrei A.; Limasov, Alexei I.; Matytsin, Alexei I.; Staver, Anatoly M.; Shebalin, Rudolf I.; and Yashin, Jury N., 4,242,787, Cl. 29-421.00E.
Yasuda, Yutaka: *See*—
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Yasujima, Akitaka; Shiratori, Naoyuki; and Ishikawa, Shingo, to Asahi-Dow Limited. Infrared multilayer film thickness measuring method and apparatus. 4,243,882, Cl. 250-339.000.
Yasumatsu, Jun: *See*—
Motonami, Masanao; Yasumatsu, Jun; and Tsujiuchi, Yoshio, 4,243,185, Cl. 242-107.200.
Yee, Tin B., to United States of America, Army. Nickel analysis device. 4,243,326, Cl. 356-414.000.
Yoneda, Shigeo: *See*—
Yoshida, Zen-ichi; Yoneda, Shigeo; Murata, Hideki; Yasuda, Yutaka; and Nagakura, Saburo, 4,243,601, Cl. 260-396.00N.
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Yoo, Jin S.: *See*—
Burk, Emmett H.; Yoo, Jin S.; Karch, John A.; and Sun, Jui-Yuan, 4,243,550, Cl. 252-412.000.
York, Kenneth L.; Annal, Peter R.; and Legory, John E., to Burroughs Corporation. Method and apparatus for enhancing I/O transfers in a named data processing system. 4,244,049, Cl. 371-38.000.
York, Kenneth V.: *See*—
Matthews, Horton; York, Kenneth V.; and Goodsmith, Dale H., 4,242,793, Cl. 29-798.000.
Yoshida Kogyo KK: *See*—
Shimai, Hideo, 4,242,785, Cl. 29-408.000.
Yoshida, Zen-ichi; Yoneda, Shigeo; Murata, Hideki; Yasuda, Yutaka; and Nagakura, Saburo, to Ajinomoto Company Incorporated; and Zen-Ichi Yoshida. Cyano substituted diphenoquinones and a process for preparing them. 4,243,601, Cl. 260-396.00N.
Yoshihito, Yamamoto: *See*—
Masujima, Sho; and Yoshihito, Yamamoto, 4,243,139, Cl. 206-330.000.
Yoshikawa, Norio, to Denki Onkyo Co., Ltd. Deflection coil. 4,243,965, Cl. 335-213.000.
Yoshimura, Shigeru: *See*—
Kitahara, Sigeyosi; Okada, Isamu; Jumonji, Shigeru; Nemoto, Takayuki; Yoshimura, Shigeru; Soma, Tsunenori; and Shinoda, Nobuhiko, 4,244,006, Cl. 358-210.000.
Young, Alastair J., to Automotive Products Limited. Resilient linkage means for use in vehicle fluid pressure braking systems. 4,243,272, Cl. 303-22.00R.
Young, Andrew, to Lamberton & Company Limited. Conveying apparatus. 4,243,131, Cl. 193-35.0MD.
Young, John S., to GTE Automatic Electric Laboratories Incorporated. Digitally activated coin control circuit. 4,243,841, Cl. 179-6.30R.
Zdunek, Kenneth J., to Motorola, Inc. Digital signal receiver having a dual bandwidth tracking loop. 4,243,941, Cl. 329-50.000.
Zegeer, Jim: *See*—
Griffin, Lawrence C., 4,243,048, Cl. 128-751.000.
Zeidler, James R.: *See*—
McCool, John M.; Widrow, Bernard; Hearn, Robert H.; Zeidler, James R.; Chabries, Douglas M.; and Moore, Randall H., 4,243,935, Cl. 324-77.00R.
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Zielinski, Zenon A.: *See*—
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Ziemba, Richard T., to General Electric Company. Delayed arming fuze for a spinning projectile. 4,242,963, Cl. 102-236.000.
Zimina, Ida A.: *See*—
Kruglikov, Anatoly A.; Nikolaeva, Militina A.; Vasin, Jury P.; Itkis, Zolya Y.; Shirinkin, Vladimir A.; Zimina, Ida A.; Strupinsky, Vladimir A.; and Koposov, Valery V., 4,243,780, Cl. 525-518.000.
Zimmermann, Jurgen: *See*—
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Zodrow, Rudolf, to Jagenberg Werke Aktiengesellschaft. Labeling machine, especially for bottles. 4,243,467, Cl. 156-568.000.
Zoecon Corporation: *See*—
Henrick, Clive A.; and Garcia, Barbara A., 4,243,819, Cl. 562-433.000.
Zopfi, Robert A. Supercharger apparatus with fixed baffle air-fuel mixture routing box. 4,243,010, Cl. 123-559.000.
Zube, Friedrich Wilhelm: *See*—
Go, Thiam L., 4,242,980, Cl. 116-202.000.

LIST OF REISSUE PATENTEES

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AM International, Inc.: *See—*
Johnson, Dean W., Re. 30,470, Cl. 101-269.000.

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Burlington Industries, Inc.: *See—*
Malpass, Robert C.; Illman, Walter F.; and Conklin, Delano M., Re. 30,474, Cl. 428-253.000.

Conklin, Delano M.: *See—*
Malpass, Robert C.; Illman, Walter F.; and Conklin, Delano M., Re. 30,474, Cl. 428-253.000.

Detroit Lime Company: *See—*
Parsons, Marshall F., Re. 30,469, Cl. 34-168.000.

Dow Chemical Company, The: *See—*
Teot, Arthur S.; Hamlin, Percy J.; and Savage, Albert B., Re. 30,472, Cl. 252-135.000.

Hamlin, Percy J.: *See—*
Teot, Arthur S.; Hamlin, Percy J.; and Savage, Albert B., Re. 30,472, Cl. 252-135.000.

Hassall, Cedric H.; Johnson, William H.; Krohn, Antonin; Smithen, Carey E.; and Thomas, William A., to Hoffmann-La Roche Inc. Benzophenone glycinamide derivatives. Re. 30,473, Cl. 260-112.50R.

Hoffmann-La Roche Inc.: *See—*
Hassall, Cedric H.; Johnson, William H.; Krohn, Antonin; Smithen, Carey E.; and Thomas, William A., Re. 30,473, Cl. 260-112.50R.

Illman, Walter F.: *See—*
Malpass, Robert C.; Illman, Walter F.; and Conklin, Delano M., Re. 30,474, Cl. 428-253.000.

Johnson, Dean W., to AM International, Inc. Address printing machine with roller platens and method. Re. 30,470, Cl. 101-269.000.

Johnson, William H.: *See—*
Hassall, Cedric H.; Johnson, William H.; Krohn, Antonin; Smithen, Carey E.; and Thomas, William A., Re. 30,473, Cl. 260-112.50R.

Krohn, Antonin: *See—*
Hassall, Cedric H.; Johnson, William H.; Krohn, Antonin; Smithen, Carey E.; and Thomas, William A., Re. 30,473, Cl. 260-112.50R.

Malpass, Robert C.; Illman, Walter F.; and Conklin, Delano M., to Burlington Industries, Inc. Hot melt size and yarn sized therewith and packages and fabrics of sized yarn. Re. 30,474, Cl. 428-253.000.

Parsons, Marshall F., to Detroit Lime Company. Preheater for lime kiln. Re. 30,469, Cl. 34-168.000.

Reynolds, Eugene E., to Brunswick Corporation. Automatic bowling score computing and display device. Re. 30,471, Cl. 273-54.00C.

Savage, Albert B.: *See—*
Teot, Arthur S.; Hamlin, Percy J.; and Savage, Albert B., Re. 30,472, Cl. 252-135.000.

Smithen, Carey E.: *See—*
Hassall, Cedric H.; Johnson, William H.; Krohn, Antonin; Smithen, Carey E.; and Thomas, William A., Re. 30,473, Cl. 260-112.50R.

Teot, Arthur S.; Hamlin, Percy J.; and Savage, Albert B., to Dow Chemical Company, The. Detergent composition with antisoil and antiredeposition properties. Re. 30,472, Cl. 252-135.000.

Thomas, William A.: *See—*
Hassall, Cedric H.; Johnson, William H.; Krohn, Antonin; Smithen, Carey E.; and Thomas, William A., Re. 30,473, Cl. 260-112.50R.

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Abel, Anna. Furniture stop. 257,761, 1-6-81, Cl. D8-402.000.

Acker, Peter J. Article of flatware. 257,757, 1-6-81, Cl. D7-143.000.

Ajinomoto General Foods, Inc.: *See—*
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Allen, Paul E., to Logic Devices, Inc. Fluid distributing manifold. 257,775, 1-6-81, Cl. D15-199.000.

AMP Incorporated: *See—*
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Aprahamian, Vaughn, to Le-Bo Products Company, Inc. Tray insert for tape cartridges and tape cassettes. 257,746, 1-6-81, Cl. D3-35.000.

Armbruster, Joseph M., to Sheller-Globe Corporation. Vehicle roof mounted air conditioner air outlet panel. 257,787, 1-6-81, Cl. D23-142.000.

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Arndt, Otto G.; and Arndt, James J. Receiver for a golf ball chipping game. 257,785, 1-6-81, Cl. D21-234.000.

Beall, Lester, Jr., to Crestline Furniture Co., Inc. Coffee table. 257,750, 1-6-81, Cl. D6-177.000.

Bernhardt, Floyd V. Slotted golf putter head. 257,782, 1-6-81, Cl. D21-217.000.

Bernhardt, Floyd V. Golf putter head. 257,783, 1-6-81, Cl. D21-217.000.

Borden, Inc.: *See—*
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Cambio, Orlando D., Jr., to Respiratory Care, Inc. Bottle. 257,763, 1-6-81, Cl. D9-370.000.

Chao, Chen K. Hair control clip. 257,792, 1-6-81, Cl. D28-40.000.

Clairol Incorporated: *See—*
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Dargatz, Dayton O., to Plessey Peripheral Systems. Send/receive high speed impact printer. 257,771, 1-6-81, Cl. D14-50.000.

Davis, Peter. Rocking chair. 257,749, 1-6-81, Cl. D6-49.000.

Doig, David, to Scotch House Limited, The. Textile fabric. 257,795, 1-6-81, Cl. D92-1.0AA.

Eichenberg, La Dorna E.: *See—*
Eichenberg, Robert J.; and Eichenberg, La Dorna E., 257,777, Cl. D18-15.000.

Eichenberg, Robert J.; and Eichenberg, La Dorna E. Letter stamping machine. 257,777, 1-6-81, Cl. D18-15.000.

Maza, Dale T.; and Tomblin, Glen E., to Rubbermaid Commercial Products Inc. Dolly plate for a refuse container. 257,767, 1-6-81, Cl. D12-31.000.

Miller Tilt-Top Trailer, Company: *See—*
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Onishi, Toru: *See—*
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Owens-Illinois, Inc.: *See—*
Plummer, James E., 257,754, Cl. D7-52.000.

Parker, James E., to ICL/Scientific. Pipette. 257,791, 1-6-81, Cl. D24-55.000.

Peterson, Dana. Torque type hand screwdriver. 257,759, 1-6-81, Cl. D8-85.000.

Pierson, Donald F. Carpet and rug cleaner. 257,774, 1-6-81, Cl. D15-53.000.

Plessey Peripheral Systems: *See—*
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Plummer, James E., to Owens-Illinois, Inc. Combined decanter and stopper. 257,754, 1-6-81, Cl. D7-52.000.

Princeton Industries Corporation: *See—*
Stahel, Alwin J., II, 257,753, Cl. D7-37.000.

Rabig, Donald B., to Borden, Inc. Attachment for vertically mounted file holder. 257,752, 1-6-81, Cl. D6-191.000.

Rakocy, William J.; and Tsuji, Masao, to North American Philips Corporation. Deep fryer. 257,755, 1-6-81, Cl. D7-94.000.

Redmond, Jobie G. Table. 257,751, 1-6-81, Cl. D6-179.000.

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Rubbermaid Commercial Products Inc.: *See—*
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Ryder, Francis E.: *See—*
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Ryder International Corporation: *See—*
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Forys, Edward L.; and Fujitaki, Roy K., to said Edward L. Forys; by said Roy K. Fujitaki. Putter. 257,784, 1-6-81, Cl. D21-219.000.
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Fujitaki, Roy K.: *See*—
Forys, Edward L.; and Fujitaki, Roy K., 257,784, Cl. D21-219.000.
Fukutani, Yoshifumi, to Tokyo Shibaura Electric Co., Ltd. Telephone. 257,772, 1-6-81, Cl. D14-53.000.
GAF Corporation: *See*—
Loofbourow, Donald I., 257,770, Cl. D14-11.000.
Gillette Company, The: *See*—
Gray, Michael J., 257,793, Cl. D28-48.000.
Gray, Michael J., to Gillette Company, The. Razor. 257,793, 1-6-81, Cl. D28-48.000.
Gunnarsson, Ernst G. Automatic feeder for livestock. 257,794, 1-6-81, Cl. D30-13.000.
ICL/Scientific: *See*—
Parker, James E., 257,791, Cl. D24-55.000.
Ingram, Charles E., to Four Star Corporation. Pivotal support for a wind deflector blade. 257,769, 1-6-81, Cl. D12-181.000.
Inzerillo, Gail G.; and Williams, Kathleen A. Stuffed toy clam or similar article. 257,781, 1-6-81, Cl. D21-157.000.
Ishiguro, Daisuke: *See*—
Sato, Naokuni; Onishi, Toru; and Ishiguro, Daisuke, 257,776, Cl. D16-18.000.
Johnson, Logan W. Barbecue tool. 257,756, 1-6-81, Cl. D7-105.000.
Kesling, Peter C. Dental appliance carrying case. 257,790, 1-6-81, Cl. D24-10.000.
Ketcham & McDougall, Inc.: *See*—
Macowski, William, 257,778, Cl. D19-99.000.
Lazzeroni, Edward J., to Miller Tilt-Top Trailer, Company. Trailer hitch. 257,768, 1-6-81, Cl. D12-162.000.
Le-Bo Products Company, Inc.: *See*—
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Limacher, Robert J. Combined nail-screw shield and measuring instrument. 257,758, 1-6-81, Cl. D8-14.000.
Logic Devices, Inc.: *See*—
Allen, Paul E., 257,775, Cl. D15-199.000.
Loofbourow, Donald I., to GAF Corporation. Double viewer cartridge. 257,770, 1-6-81, Cl. D14-11.000.
Loper, Ronald L.; Norwalt, Robert H.; Ulrich, Rolf D.; and Flynn, Theodore A., to Sega Enterprises, Inc. Projection television console. 257,773, 1-6-81, Cl. D14-79.000.
MacGregor, Fran, to Clairol Incorporated. Skin treatment tool. 257,747, 1-6-81, Cl. D4-14.000.
Macowski, William, to Ketcham & McDougall, Inc. Base for a desk pen set and calendar or similar articles. 257,778, 1-6-81, Cl. D19-99.000.
S. C. Johnson & Son, Inc.: *See*—
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Sanyo Electric Co., Ltd.: *See*—
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Sargent Industries, Inc.: *See*—
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Sato, Naokuni; Onishi, Toru; and Ishiguro, Daisuke, to Sanyo Electric Co., Ltd. Portable movie projector. 257,776, 1-6-81, Cl. D16-18.000.
Schachter, Jacob. Bill detector. 257,765, 1-6-81, Cl. D10-46.000.
Scotch House Limited, The: *See*—
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Sega Enterprises, Inc.: *See*—
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Armbruster, Joseph M., 257,787, Cl. D23-142.000.
Sippola, Leo W. Disc target. 257,779, 1-6-81, Cl. D21-5.000.
Smith, Edgar J. Tractor seat. 257,748, 1-6-81, Cl. D6-48.000.
Smith, Fred T., to Sargent Industries, Inc. Refuse truck body. 257,766, 1-6-81, Cl. D12-15.000.
Sotolongo, Thomas J., to AMP Incorporated. Cover for floor outlet. 257,760, 1-6-81, Cl. D8-353.000.
Stahel, Alwin J., II, to Princeton Industries Corporation. Serving tray. 257,753, 1-6-81, Cl. D7-37.000.
Strauss, Manfred, to Shelcore, Inc. Simulative driving toy. 257,780, 1-6-81, Cl. D21-142.000.
Suhajda, John I., to S. C. Johnson & Son, Inc. Dispenser for vaporizable substance. 257,788, 1-6-81, Cl. D23-150.000.
Tajima, Hajime, to Ajinomoto General Foods, Inc. Combined jar and closure. 257,764, 1-6-81, Cl. D9-399.000.
Thomas, Michael D.; and Ryder, Francis E., to Ryder International Corporation. Contact lens sterilizer unit. 257,789, 1-6-81, Cl. D24-9.000.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Fukutani, Yoshifumi, 257,772, Cl. D14-53.000.
Tomblin, Glen E.: *See*—
Maza, Dale T.; and Tomblin, Glen E., 257,767, Cl. D12-31.000.
Tsuji, Masao: *See*—
Rakocy, William J.; and Tsuji, Masao, 257,755, Cl. D7-94.000.
Ulrich, Rolf D.: *See*—
Loper, Ronald L.; Norwalt, Robert H.; Ulrich, Rolf D.; and Flynn, Theodore A., 257,773, Cl. D14-79.000.
Vann, Charles B. Dual surfboard fin or the like. 257,786, 1-6-81, Cl. D21-237.000.
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Beineke, Walter F., to Purdue Research Foundation. Distinct variety of black walnut tree. 4,614, 1-6-81, Cl. 32.000.
DeVor Nurseries, Inc.: *See*—
DeVor, Paul F., 4,613, Cl. 18.000.
DeVor, Paul F., to DeVor Nurseries, Inc. Rose plant named Paul's Pink. 4,613, 1-6-81, Cl. 18.000.
Henry Field Seed and Nursery Company: *See*—
Turnbull, Kenneth L.; and Hybskmann, Daniel K., 4,616, Cl. 36.000.
Hybskmann, Daniel K.: *See*—
Turnbull, Kenneth L.; and Hybskmann, Daniel K., 4,616, Cl. 36.000.
Kevorkian, Aram. Peach tree. 4,617, 1-6-81, Cl. 43.000.
McGredy, Samuel D. Rose plant. 4,612, 1-6-81, Cl. 3.000.
Purdue Research Foundation: *See*—
Beineke, Walter F., 4,614, Cl. 32.000.
Turnbull, Kenneth L.; and Hybskmann, Daniel K., to Henry Field Seed and Nursery Company. Pear tree. 4,616, 1-6-81, Cl. 36.000.
Wrigley, Irving H. Apple tree. 4,615, 1-6-81, Cl. 34.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 6TH DAY OF JANUARY, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Du Pont de Nemours, E. I., and Company: *See*—
Logullo, Francis M., T100,201, Cl. 8-495.000.
Holfeld, Winfried T. Process for calendering knit fabrics. T100,202, 1-6-81, Cl. 38-144.000.
Lauck, John E., to Shell Oil Company. Label adhesive. T100,203, 1-6-81, Cl. 428-40.000.
Logullo, Francis M., to Du Pont de Nemours, E. I., and Company. Indigo dyeing of polyester fibers. T100,201, 1-6-81, Cl. 8-495.000.
O'Neill, George J.: *See*—
Weemes, Doyle A.; Seymour, Robert W.; and O'Neill, George J., T100,204, Cl. 264-177.00R.
Seymour, Robert W.: *See*—
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Lauck, John E., T100,203, Cl. 428-40.000.
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119	4,242,878
148	4,242,879
200	4,242,880
225	4,242,881
256	4,242,882
306	4,242,883
371	4,242,884
500	4,242,885

CLASS 63

14 B	4,242,886

CLASS 64

4	4,242,887
21	4,242,888
30 R	4,242,889

CLASS 65

2	4,243,398
4 B	4,243,399
16	4,243,400
29	4,243,402
153	4,243,401

CLASS 66

133	4,242,890
149 S	4,242,891

CLASS 71

67	4,243,403
73	4,243,404
76	4,243,405
88	4,243,406
90	4,243,407
92	4,243,409
092	4,243,408
118	4,243,410

CLASS 72

66	4,242,892
96	4,242,894
122	4,242,893
257	4,242,895
262	4,242,897
307	4,242,898
342	4,242,899
345	4,242,896
	4,242,900
	4,242,901
410	4,242,902
413	4,242,903
461	4,242,904

CLASS 73

15 R	4,242,905
73	4,242,906
341	4,242,907
421.5 R	4,242,908
422 GC	4,242,909
516 LM	4,242,910
620	4,242,911
626	4,242,912
	4,242,913
711	4,242,914
784	4,242,915
861.83	4,242,916

CLASS 74

5.5	4,242,917
84 S	4,242,918
198	4,242,919
361	4,242,920
574	4,242,921
687	4,242,922
700	4,242,923
759	4,242,924
792	4,242,925

CLASS 75

69	4,243,411
171	4,243,412
234	4,243,413
244	4,243,414

CLASS 76

25 A	4,242,926
101 A	4,242,927

CLASS 81

3 R	4,242,928
9.5 R	4,242,929
57.29	4,242,931
437	4,242,932
474	4,242,930

CLASS 83

37	4,242,933
100	4,242,934

CLASS 84

1.01	4,242,935
1.03	4,242,936
1.15	4,242,937
1.16	4,242,938

CLASS 91

277	4,242,940
319	4,242,941
358 R	4,242,942
369 A	4,242,943

CLASS 92

2	4,242,944
26	4,242,945
59	4,242,946
108	4,242,947
212	4,242,948

CLASS 98

2	4,242,950
2.11	4,242,951

CLASS 99

625	4,242,952

CLASS 100

100	4,242,953
176	4,242,954

CLASS 101

93.29	4,242,955
123	4,242,956
126	4,242,957
269	Re.30,470
365	4,242,958
420	4,242,959

CLASS 102

92.7	4,242,960
93	4,242,961
213	4,242,962
236	4,242,963
275	4,242,964

CLASS 104

96	4,242,965

CLASS 105

182 R	4,242,966

CLASS 106

13	4,243,415
14.13	4,243,416
	4,243,417
18.22	4,243,418
18.23	4,243,419
38.3	4,243,420
50	4,243,421
52	4,243,422
54	4,243,423
58	4,243,424
117	4,243,425
273 R	4,243,426
287.16	4,243,427
288 B	4,243,428
306	4,243,429
308 M	4,243,430

CLASS 108

11	4,242,967
20	4,242,968
26	4,242,971
153	4,242,969
159	4,242,970

CLASS 110

234	4,242,972

CLASS 112

158 E	4,242,973
	4,242,974
226	4,242,975
264.1	4,242,976

CLASS 114

210	4,242,977
253	4,242,978

CLASS 116

202	4,242,980

CLASS 118

47	4,242,981
716	4,242,982

CLASS 119

1	4,242,763
23	4,242,983
52 R	4,242,984
54	4,242,985

CLASS 122

33	4,242,986
44 A	4,242,987
451 R	4,242,989
458	4,242,988

CLASS 123

59 B	4,242,993
247	4,243,006
263	4,242,990
325	4,243,002
326	4,242,991
339	4,242,994
367	4,243,004
407	4,242,996
419	4,243,007
425	4,242,995
	4,243,008
435	4,243,009
442	4,243,000
	4,243,003
491	4,242,992
548	4,242,999
559	4,243,010
568	4,242,997
	4,242,998
583	4,243,001
638	4,243,005

CLASS 125

13 R	4,243,011
23 R	4,243,012

CLASS 126

43	4,243,013
119	4,243,014
120	4,243,015
211	4,243,016
409	4,243,017
425	4,243,018
438	4,243,019
444	4,243,020
449	4,243,021
	4,243,022
	4,243,023

CLASS 128

1 A	4,243,024
70	4,243,025
77	4,243,026
80 F	4,243,027
165	4,243,028
204.21	4,243,029
213 R	4,243,030
214 C	4,243,032
214 E	4,243,031
214.4	4,243,033
	4,243,034
215	4,243,035
	4,243,036
303 R	4,243,037
305	4,243,038
327	4,243,039
328	4,243,040
402	4,243,041
419 P	4,243,042
422	4,243,043
696	4,243,044
	4,243,045
709	4,243,046
751	4,243,047
	4,243,048
757	4,243,049
784	4,243,050
798	4,243,051
	4,243,052

CLASS 131

4 A	4,243,053
22 R	4,243,054
76	4,243,055
140 B	4,243,056
147 A	4,243,057
171 R	4,243,058

CLASS 132

37 R	4,243,061

CLASS 134

104	4,243,431

CLASS 136

244	4,243,432

CLASS 137

2	4,243,059
62	4,243,062
100	4,243,063
117	4,243,064
171	4,243,065
202	4,243,066
329.03	4,243,067
363	4,243,068
484.6	4,243,069
510	4,243,070
625.46	4,243,071
625.69	4,243,060
637.1	4,243,072

CLASS 138

26	4,243,073
118.1	4,243,074
174	4,243,075

CLASS 139

449	4,243,076

CLASS 140

93.4	4,243,077

CLASS 141

1	4,243,078
	4,243,079
2	4,243,080

CLASS 144

3 A	4,243,081
35 A	4,243,083
39	4,243,084
133 R	4,243,082
230	4,243,085

CLASS 148

1.5	4,243,433
	4,243,435
6.15 R	4,243,434
9.5	4,243,436
11.5 A	4,243,438
11.5 C	4,243,437
20.6	4,243,439
23	4,243,440
128	4,243,441

CLASS 149

19.92	4,243,442
35	4,243,443
98	4,243,444

CLASS 152

218	4,243,087
223	4,243,088
370	4,243,089

CLASS 156

55	4,243,445
62.4	4,243,446
64	4,243,447
73.5	4,243,448
82	4,243,449
123 R	4,243,450
132	4,243,451
138	4,243,452
152	4,243,453
162	4,243,454
187	4,243,455

214 4,243,456
245 4,243,457
247 4,243,458
272 4,243,459
275 4,243,460
288 4,243,461
310 4,243,462
324 4,243,463
4,243,464
362 4,243,465
363 4,243,466
568 4,243,467
577 4,243,468
583.1 4,243,469
583.9 4,243,470
616 R 4,243,471
624 4,243,472
626 4,243,473
630 4,243,474
643 4,243,475
4,243,476

CLASS 159

13 A 4,243,477

CLASS 160

145 4,243,090
189 4,243,091

CLASS 162

4 4,243,478
141 4,243,480
158 4,243,481
175 4,243,479
202 4,243,482
343 4,243,483

CLASS 164

49 4,243,092
96 4,243,093

CLASS 165

114 4,243,094
125 4,243,095
134 DP 4,243,096
163 4,243,097

CLASS 166

59 4,243,098
65 R 4,243,099
259 4,243,100
261 4,243,101
314 4,243,102

CLASS 172

59 4,243,103
148 4,243,104
311 4,243,105
804 4,243,106

CLASS 173

43 4,243,107
93 4,243,108
93.5 4,243,109
104 4,243,110
169 4,243,111

CLASS 174

38 4,243,834
48 4,243,835

CLASS 175

55 4,243,112
410 4,243,113

CLASS 176

30 4,243,484
37 4,243,485
4,243,486
38 4,243,487

CLASS 177

210 C 4,243,114

CLASS 178

4.1 R 4,243,836
19 4,243,843

CLASS 179

1 D 4,243,840
1 F 4,243,838
4,243,839
1 VC 4,243,837
6.3 R 4,243,841
18 FA 4,243,842
81 R 4,243,844
90 B 4,243,845
90 K 4,243,846
99 R 4,243,847
156 R 4,243,851

CLASS 180

165 4,243,115

CLASS 181

118 4,243,116
286 4,243,117

CLASS 182

3 4,243,118
96 4,243,119
98 4,243,120
196 4,243,121
200 4,243,122

CLASS 188

73.5 4,243,123
79.5 P 4,243,124
4,243,125

CLASS 192

2 4,243,126
4 A 4,243,127
35 4,243,128
56 C 4,243,129
98 4,243,130

CLASS 193

35 MD 4,243,131
40 4,243,132

CLASS 194

9 R 4,243,133
59 4,243,134

CLASS 198

370 4,243,135
493 4,243,136
748 4,243,137

CLASS 200

5 A 4,243,852
8 R 4,243,853
48 R 4,243,854
81.4 4,243,855
81.5 4,243,856
83 C 4,243,857
83 P 4,243,858
144 B 4,243,859
148 R 4,243,860
159 B 4,243,861

CLASS 201

6 4,243,488
12 4,243,489

CLASS 202

241 4,243,490

CLASS 203

2 4,243,491
8 4,243,492
10 4,243,526
66 4,243,493

CLASS 204

1.5 4,243,494
11 4,243,495
56 R 4,243,496
98 4,243,497
112 4,243,498
119 4,243,499
159.12 4,243,500
180 P 4,243,501
243 R 4,243,502
290 F 4,243,503
296 4,243,504
298 4,243,505
4,243,506
301 4,243,507
4,243,508

CLASS 206

188 4,243,138
330 4,243,139
380 4,243,140
4,243,141
387 4,243,142
429 4,243,143
532 4,243,144

CLASS 208

8 R 4,243,509
11 R 4,243,510
4,243,511
39 4,243,512
44 4,243,513
91 4,243,514
138 4,243,515
139 4,243,516
164 4,243,517
4,243,518
210 4,243,519

CLASS 209

10 4,243,520

CLASS 210

104 4,243,528
109 4,243,529
137 4,243,530
188 4,243,531
196 4,243,532
247 4,243,533
315 4,243,535
321.1 4,243,536
626 4,243,521
652 4,243,523
656 4,243,534
700 4,243,524
754 4,243,525
774 4,243,522
785 4,243,527

CLASS 211

49 D 4,243,145
118 4,243,146

CLASS 212

159 4,243,147
196 4,243,148

CLASS 213

62 A 4,243,149

CLASS 215

247 4,243,150

CLASS 219

68 4,243,862
69 V 4,243,863
69 W 4,243,864
121 EK 4,243,866
121 LC 4,243,867
121 P 4,243,865
125.11 4,243,868
216 4,243,869
295 4,243,870
326 4,243,871
375 4,243,872
386 4,243,873
467 4,243,874
497 4,243,875

CLASS 220

216 4,243,151
270 4,243,152

CLASS 221

34 4,243,153
253 4,243,154

CLASS 222

3 4,243,155
44 4,243,157
184 4,243,158
188 4,243,159
373 4,243,160
402.14 4,243,161
530 4,243,162
541 4,243,156

CLASS 223

115 4,243,163

CLASS 224

52 4,243,164
149 4,243,165

CLASS 225

1 4,243,166

CLASS 226

21 4,243,167

CLASS 227

119 4,243,168

CLASS 228

175 4,243,169

CLASS 229

2.54 R 4,243,170
52 B 4,243,171

CLASS 233

20 A 4,243,172

CLASS 235

455 4,243,876

CLASS 236

46 R 4,243,173
4,243,174
49 4,243,175

CLASS 237

7 4,243,176
51 4,243,177

CLASS 239

436 4,243,178

CLASS 241

24 4,243,179
79.2 4,243,180
142 4,243,181
153 4,243,182
186.2 4,243,183
273.2 4,243,184

CLASS 242

107.2 4,243,185
195 4,243,186

CLASS 244

3.13 4,243,187
53 B 4,243,188
75 R 4,243,189
153 A 4,243,190
153 R 4,243,191
215 4,243,192

CLASS 248

62 4,243,193
188.1 4,243,194
429 4,243,195
475 R 4,243,196
678 4,243,197

CLASS 249

66 R 4,243,198
142 4,243,199
187 R 4,243,200

CLASS 250

201 4,243,877
213 VT 4,243,878
221 4,243,879
252 4,243,880
338 4,243,881
339 4,243,882
343 4,243,883
361 R 4,243,884
370 4,243,885
390 4,243,886
423 P 4,243,887
491 4,243,888
507 4,243,889
551 4,243,890
571 4,243,891

CLASS 251

61.4 4,243,202
297 4,243,201
305 4,243,203
366 4,243,204

CLASS 252

49.3 4,243,537
51.5 A 4,243,538
52 R 4,243,539
56 S 4,243,540
62.9 4,243,541
105 4,243,543
135 Re.30,472
4,243,544
140 4,243,545
174.12 4,243,546
194 4,243,547
305 4,243,548
355 4,243,549
412 4,243,550
428 4,243,551
429 B 4,243,552
439 4,243,553
4,243,554
441 4,243,555
455 Z 4,243,556
4,243,557
466 B 4,243,558
548 4,243,559

CLASS 254

113 4,243,205
132 4,243,206

CLASS 256

64 4,243,207

CLASS 260

2.3 4,243,560
4 R 4,243,561
17 A 4,243,562
17 R 4,243,563
17.4 ST 4,243,564
22 CQ 4,243,565
29.6 MM 4,243,567
29.6 R 4,243,566
4,243,568
29.6 TA 4,243,569
30.2 4,243,570
31.8 H 4,243,571
31.8 R 4,243,572
33.6 UA 4,243,573
37 N 4,243,574
37 PC 4,243,575
42.15 4,243,576
42.47 4,243,577
42.52 4,243,578
45.7 R 4,243,579
45.8 NT 4,243,580
45.85 S 4,243,581
112 R 4,243,582
112.5 R Re.30,473
156 4,243,583
165 4,243,584
239 BD 4,243,585
239.55 R 4,243,586
245.4 4,243,587
4,243,588
245.5 4,243,589
319.1 4,243,590
326.22 4,243,591
340.7 4,243,592
343.3 G 4,243,594
345.7 P 4,243,595
346.11 4,243,593
347.7 4,243,596
347.8 4,243,597
348.11 4,243,598
348.25 4,243,599
375 B 4,243,542
377 4,243,600
396 N 4,243,601
403 4,243,602
410.7 4,243,603
430 4,243,604
465 D 4,243,606
501.11 4,243,608

CLASS 261

122 4,243,616

CLASS 264

1 4,243,618
39 4,243,617
40.6 4,243,619
45.1 4,243,620
65 4,243,621
66 4,243,622
69 4,243,623
82 4,243,624
120 4,243,625
153 4,243,626
171 4,243,627
275 4,243,628
563 4,243,629

CLASS 266

158 4,243,208
219 4,243,209
220 4,243,210
268 4,243,211

CLASS 269

75 4,243,212
137 4,243,213
327 4,243,214

CLASS 271

263 4,243,216

CLASS 272

73 4,243,217
114 4,243,218
117 4,243,219

CLASS 273

1 R 4,243,220
29 A 4,243,221
54 C Re.30,471
127 R 4,243,222
141 R 4,243,223
157 R 4,243,224
272 4,243,225
292 4,243,226
357 4,243,227
378 4,243,228
402 4,243,229

CLASS 277

3 4,243,230
22 4,243,231
37 4,243,232
81 P 4,243,233
84 4,243,234
152 4,243,235

CLASS 279

110 4,243,236
121 4,243,237

CLASS 280

20 4,243,238
47.13 B 4,243,239
94 4,243,240
158.1 4,243,241
414 R 4,243,242
446 B 4,243,243
605 4,243,244
626 4,243,245
628 4,243,246
700 4,243,247
735 4,243,248

CLASS 281

1 4,243,249

CLASS 282

27.5 4,243,250

CLASS 285

4 4,243,251
39 4,243,252
45 4,243,253
242 4,243,254

CLASS 290

1 B 4,243,893
1 R 4,243,892

CLASS 292

113 4,243,255
245 4,243,256

CLASS 294

1 B 4,243,259
88 4,243,257
4,243,258

CLASS 296

24 R 4,243,260
146 4,243,262
213 4,243,261

CLASS 297

42 4,243,263
367 4,243,264
423 4,243,265
483 4,243,266

CLASS 298

17 B 4,243,267

CLASS 299

32 4,243,268

CLASS 301

12 R 4,243,269
37 SS 4,243,270

CLASS 303

7 4,243,271
22 A 4,243,273
22 R 4,243,272

CLASS 307

147 4,243,894
205 4,243,895
213 4,243,896
221 D 4,243,897
310 4,243,898

CLASS 308

9 4,243,274
128 4,243,275
187 4,243,276
195 4,243,277

CLASS 310

14 4,243,899
49 R 4,243,900
94 4,243,901
154 4,243,902
4,243,903

CLASS 312

38 4,243,278
107 4,243,279
140 4,243,280
208 4,243,281
259 4,243,282

CLASS 313

99 4,243,904
102 4,243,905
229 4,243,906
318 4,243,907
407 4,243,908
487 4,243,909
522 4,243,910

CLASS 315

3 4,243,911
4,243,912
3.5 4,243,914
4,243,915
8 4,243,913
111.8 4,243,916
241 R 4,243,917
389 4,243,918

CLASS 318

269 4,243,919
285 4,243,920
314 4,243,921
561 4,243,922
4,243,923
573 4,243,924
603 4,243,925
798 4,243,926
803 4,243,927

CLASS 320

2 4,243,928
23 4,243,929

CLASS 323

302 4,243,931

CLASS 324

54 4,243,932
60 CD 4,243,933
72 4,243,934
77 R 4,243,935
96 4,243,936
158 T 4,243,937
169 4,243,938
201 4,243,939

CLASS 328

140 4,243,940

CLASS 329

50 4,243,941

CLASS 330

4.3 4,243,942
100 4,243,943
135 4,243,944
253 4,243,945
265 4,243,946
284 4,243,947
289 4,243,948

CLASS 331

9 4,243,949
78 4,243,950
94.5 H 4,243,951
94.5 S 4,243,952
117 R 4,243,953
4,243,954

CLASS 332

37 D 4,243,955

CLASS 333

18 4,243,956
28 R 4,243,957
165 4,243,958
166 4,243,959
196 4,243,960
233 4,243,961

CLASS 334

7 4,243,962

CLASS 335

151 4,243,963
156 4,243,964
213 4,243,965

CLASS 336

70 4,243,966

CLASS 337

340 4,243,967

CLASS 338

28 4,243,968
309 4,243,969

CLASS 339

14 R 4,243,283
21 R 4,243,284
32 R 4,243,285
97 R 4,243,286
99 R 4,243,287
4,243,288
126 RS 4,243,289
143 R 4,243,290
184 M 4,243,291
224 4,243,292

CLASS 340

52 D 4,243,970
52 H 4,243,971
146.3 SY 4,243,972
148 4,243,973
347 DD 4,243,976
4,243,977
347 NT 4,243,974
4,243,975
373 4,243,978
554 4,243,979
572 4,243,980
629 4,243,981
664 4,243,982
674 4,243,983
703 4,243,984
753 4,243,985
756 4,243,986
799 4,243,987

CLASS 343

5 VQ 4,243,988
715 4,243,989
771 4,243,990
777 4,243,991
873 4,243,992
895 4,243,993

CLASS 346

140 R 4,243,994
4,243,995

CLASS 350

3.71 4,243,293
6.8 4,243,294
96.14 4,243,295
96.15 4,243,296
4,243,297
96.33 4,243,298
96.34 4,243,299
150 4,243,300
296 4,243,301
345 4,243,302
4,243,303

CLASS 351

27 4,243,304
121 4,243,305
136 4,243,306

CLASS 353

57 4,243,307

CLASS 354

60 E 4,243,308
197 4,243,309
299 4,243,310

CLASS 355

8 4,243,311
4,243,312
14 R 4,243,313
29 4,243,314
52 4,243,315
75 4,243,316
91 4,243,317

CLASS 356

39 4,243,318
73 4,243,319
73.1 4,243,320
135 4,243,321
244 4,243,322
345 4,243,323
350 4,243,324
372 4,243,325
414 4,243,326
432 4,243,327

CLASS 357

17 4,243,996
23 4,243,997
28 4,243,998
38 4,243,999
39 4,244,000
44 4,244,001
68 4,244,002

CLASS 358

50 4,244,003
138 4,244,004
201 4,244,005
210 4,244,006
257 4,244,007

CLASS 360

45 4,244,008
71 4,244,009

CLASS 361

433 4,244,010

CLASS 362

183 4,244,011
216 4,244,012
4,244,013
249 4,244,014

CLASS 363

8 4,244,015
98 4,244,016
138 4,244,017

CLASS 364

200 4,244,018
4,244,019
413 4,244,020
4,244,021
420 4,244,022
431 4,244,023
472 4,244,025
485 4,244,024
565 4,244,026
703 4,244,027
712 4,244,028
728 4,244,029
825 4,244,030
900 4,244,031
4,244,032
4,244,033
4,244,034

CLASS 365

149 4,244,035

CLASS 366

62 4,243,328

CLASS 367

88 4,244,036
121 4,244,037

CLASS 368

35 4,244,038
66 4,244,039
69 4,244,040
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85 4,244,043
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45 4,243,848
46 4,243,850
62 4,243,849

CLASS 370

3 4,244,045
62 4,244,046
69 4,244,047
110 4,243,930

CLASS 371

15 4,244,048
38 4,244,049
66 4,244,050

CLASS 375

17 4,244,051
19 4,244,052

CLASS 400

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158 4,243,333
194 4,243,330
247 4,243,334
718 4,243,335

CLASS 401

6 4,243,336
132 4,243,337
195 4,243,338

CLASS 403

4 4,243,339
16 4,243,341
324 4,243,342
397 4,243,343

CLASS 405

2 4,243,344
168 4,243,345

CLASS 406

57 4,243,346

CLASS 407

15 4,243,347

CLASS 408

186 4,243,348

CLASS 410

77 4,243,349
100 4,243,350

CLASS 411

41 4,242,939
174 4,243,086

CLASS 414

206 4,243,351
313 4,243,352
439 4,243,353
607 4,243,354
620 4,243,355
723 4,243,356

CLASS 415

215 4,243,357

CLASS 416

114 4,243,358
138 4,243,359
191 4,243,360

CLASS 417

554 4,243,361

CLASS 422

62 4,243,630
90 4,243,631
119 4,243,632
129 4,243,633
144 4,243,634
176 4,243,635
225 4,243,636

CLASS 423

10 4,243,637
17 4,243,638
63 4,243,639
132 4,243,640
179.5 4,243,641
277 4,243,642
319 4,243,643
352 4,243,644
428 4,243,645
447.1 4,243,646
573 G 4,243,647
573 R 4,243,648
608 4,243,649
659 4,243,650

CLASS 424

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5 4,243,653
12 4,243,654
19 4,243,655
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47 4,243,657
52 4,243,658
70 4,243,659
84 4,243,660
117 4,243,661
180 4,243,662
181 4,243,663
243 4,243,664
246 4,243,665
248.54 4,243,666
251 4,243,667
258 4,243,668
263 4,243,669
269 4,243,670
273 R 4,243,671
274 4,243,672
275 4,243,673
283 4,243,674
286 4,243,675
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305 4,243,677
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322 4,243,680
330 4,243,681
331 4,243,682
4,243,683

CLASS 425

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222 4,243,365
303 4,243,366
385 4,243,367
405 R 4,243,368
451.2 4,243,369
462 4,243,370

CLASS 426

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53 4,243,685
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CLASS 427

2 4,243,692
4 4,243,693
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256 4,243,702
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386 4,243,705
4,243,706
388.4 4,243,707

CLASS 428

31 4,243,711
35 4,243,712
141 4,243,708
195 4,243,709
208 4,243,710
245 4,243,713
253 Re.30,474
258 4,243,714
263 4,243,715
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411 4,243,718
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412 4,243,720
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450 4,243,722
474.4 4,243,723
474.7 4,243,724
517 4,243,725
545 4,243,726
558 4,243,727
570 4,243,728
577 4,243,729
659 4,243,730

CLASS 429

13 4,243,731
94 4,243,733
105 4,243,732

CLASS 430

8 4,243,734
25 4,243,735
115 4,243,736
170 4,243,737
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270 4,243,740
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551 4,243,747
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202 4,243,376
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16 4,243,387
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CLASS 434

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CLASS 435

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162 4,243,750
168 4,243,751
209 4,243,752
288 4,243,753

CLASS 440

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CLASS 455

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174 4,244,055
213 4,244,056

CLASS 493

295 4,242,949
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CLASS 521

55 4,243,754
99 4,243,755
125 4,243,756
154 4,243,757
158 4,243,758
167 4,243,759
176 4,243,760
181 4,243,761

CLASS 525

6 4,243,762
27 4,243,763
67 4,243,764
86 4,243,765
92 4,243,766
102 4,243,767
127 4,243,768
222 4,243,769
531 4,243,770
340 4,243,771
344 4,243,772
387 4,243,773
405 4,243,774
415 4,243,775
420 4,243,776
425 4,243,777
454 4,243,778
462 4,243,779
518 4,243,780

CLASS 526

68 4,243,781
88 4,243,784
115 4,243,785
137 4,243,786
140 4,243,782
180 4,243,787
225 4,243,783
261 4,243,788
263 4,243,789
320 4,243,790
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CLASS 528

73 4,243,792
75 4,243,793
112 4,243,794
168 4,243,795
224 4,243,796
239 4,243,797
371 4,243,798
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422 4,243,800

CLASS 536

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91 4,243,802

CLASS 544

26 4,243,803
162 4,243,804
375 4,243,805
396 4,243,806

CLASS 546

232 4,243,807
285 4,243,808
291 4,243,809
295 4,243,810

CLASS 548

215 4,243,811
248 4,243,812
306 4,243,813
344 4,243,814

CLASS 556

414 4,243,605

CLASS 560

25 4,243,815
60 4,243,816
62 4,243,817
224 4,243,818

CLASS 562

433 4,243,819
583 4,243,820

CLASS 564

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491 4,243,610

CLASS 568

379 4,243,611
431 4,243,612
482 4,243,613
561 4,243,821
769 4,243,822
824 4,243,823
931 4,243,614

CLASS 570

150 4,243,615
257 4,243,607

CLASS 585

259 4,243,824
428 4,243,825
434 4,243,826
463 4,243,827
467 4,243,828
511 4,243,829
717 4,243,830
824 4,243,831

CLASSIFICATION OF DESIGNS

D3—	35	257,746		94	257,755		399	257,764		53	257,772		142	257,780		150	257,788
D4—	14	257,747		105	257,756	D10—	46	257,765		79	257,773		157	257,781	D24—	9	257,789
D6—	48	257,748		143	257,757	D12—	15	257,766	D15—	53	257,774		217	257,782		10	257,790
	49	257,749	D8—	14	257,758		31	257,767		199	257,775			257,783		55	257,791
	177	257,750		85	257,759		162	257,768	D16—	18	257,776		219	257,784	D28—	40	257,792
	179	257,751		353	257,760		181	257,769	D18—	15	257,777		234	257,785		48	257,793
	191	257,752		402	257,761	D14—	11	257,770	D19—	99	257,778		237	257,786	D30—	13	257,794
D7—	37	257,753	D9—	307	257,762		50	257,771	D21—	5	257,779	D23—	142	257,787	D92—	1 AA	257,795
	52	257,754		370	257,763												

CLASSIFICATION OF PLANTS

P.—	3	4,612		18	4,613		32	4,614		34	4,615		36	4,616		43	4,617

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[Notice of Dec. 16, 1969, 869 O.G. 6877]

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PATENTS

4 :	4,243,241		4,242,977		4,243,630		4,244,011	15 :	4,242,825		4,244,018
	4,243,281		4,243,041		4,243,637	09 :	4,242,784	16 :	4,243,154	18 :	4,242,780
	4,243,779		4,243,046		4,243,644		4,242,871	17 :	4,242,792		4,242,813
6 :	4,242,760		4,243,047		4,243,647		4,242,872		4,242,834		4,242,855
	4,242,901		4,243,069		4,243,648		4,242,911		4,242,863		4,242,921
	4,243,026		4,243,071		4,243,653		4,243,053		4,242,866		4,242,948
	4,243,159		4,243,080		4,243,654		4,243,188		4,242,881		4,243,124
	4,243,229		4,243,083		4,243,687		4,243,377		4,242,900		4,243,220
	4,243,252		4,243,098		4,243,697		4,243,595		4,242,926		4,243,357
	4,243,322		4,243,100		4,243,701		4,243,674		4,242,932		4,243,461
	4,243,411		4,243,112		4,243,752		4,243,696		4,242,935		4,243,501
	4,243,618		4,243,134		4,243,757		4,243,835		4,242,936		4,243,570
	4,243,868		4,243,184		4,243,771		4,243,843		4,242,956		4,243,587
	4,243,974		4,243,186		4,243,777		4,243,866		4,243,031		4,243,588
	4,244,015		4,243,192		4,243,790		4,243,869		4,243,040		4,243,681
	4,244,044		4,243,194		4,243,798		4,243,904		4,243,075		4,243,753
9 :	4,242,786		4,243,199		4,243,811		4,243,938		4,243,093		4,243,800
	4,242,795		4,243,202		4,243,819		4,243,980		4,243,114		4,243,813
	4,242,902		4,243,203		4,243,836		4,244,025		4,243,133		4,243,877
	4,243,068		4,243,228		4,243,851	10 :	4,242,769		4,243,140		4,243,913
01 :	4,243,326		4,243,242		4,243,854		4,243,481		4,243,151		4,243,947
	4,243,444		4,243,254		4,243,865		4,243,573		4,243,161		4,243,954
	4,243,632		4,243,259		4,243,878		4,243,574		4,243,162		4,243,972
	4,243,829		4,243,270		4,243,886		4,243,580		4,243,167	19 :	4,243,015
	4,243,847		4,243,310		4,243,888		4,243,702		4,243,214		4,243,176
04 :	4,242,917		4,243,323		4,243,893		4,243,788		4,243,222		4,243,193
	4,243,028		4,243,327		4,243,900		4,243,802		4,243,230		4,243,207
	4,243,734		4,243,328		4,243,935	11 :	Re.30,469		4,243,258		4,243,223
	4,243,841		4,243,331		4,243,942		4,243,032		4,243,286		4,244,016
	4,243,898		4,243,335		4,243,949	12 :	4,242,766		4,243,289	20 :	4,242,985
	4,243,955		4,243,345		4,243,960		4,242,788		4,243,292		4,243,407
06 :	Re.30,471		4,243,361		4,243,990		4,242,828		4,243,352	21 :	4,243,063
	4,242,761		4,243,394		4,243,992		4,242,856		4,243,466		4,243,153
	4,242,794		4,243,408		4,244,008		4,242,915		4,243,515		4,243,238
	4,242,797		4,243,427		4,244,012		4,242,961		4,243,535		4,243,551
	4,242,801		4,243,433		4,244,019		4,242,962		4,243,550		4,243,907
	4,242,804		4,243,454		4,244,022		4,243,035		4,243,558	22 :	4,242,981
	4,242,807		4,243,458		4,244,024		4,243,050		4,243,634		4,243,037
	4,242,812		4,243,468		4,244,028		4,243,209		4,243,659		4,243,118
	4,242,819		4,243,469		4,244,032		4,243,239		4,243,705		4,243,138
	4,242,824		4,243,472		4,244,037		4,243,348		4,243,826		4,243,519
	4,242,844		4,243,489	08 :	4,242,928		4,243,354		4,243,827		4,243,527
	4,242,870		4,243,500		4,243,011		4,243,464		4,243,830		4,243,557
	4,242,874		4,243,505		4,243,029		4,243,566		4,243,831		4,244,020
	4,242,875		4,243,510		4,243,091		4,243,643		4,243,852	24 :	4,242,983
	4,242,899		4,243,523		4,243,110		4,243,680		4,243,864		4,243,158
	4,242,907		4,243,528		4,243,498		4,243,709		4,243,867		4,243,212
	4,242,908		4,243,547		4,243,509		4,243,988		4,243,879		4,243,265
	4,242,909		4,243,556		4,243,511		4,243,989		4,243,925		4,243,274
	4,242,925		4,243,563		4,243,639	13 :	4,242,861		4,243,941		4,243,300
	4,242,941		4,243,577		4,243,754		4,242,970		4,243,963		4,243,763
	4,242,964		4,243,617		4,243,946		4,243,240		4,243,967		4,244,036
	4,242,969		4,243,625		4,243,970		4,243,387		4,244,014	25 :	4,242,778

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18 : 4,614
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